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OFFSHORE PORTS AND TERMINALS

HEARINGS
BEFORE THE
COMMITTEE ON
MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES
NINETY-THIRD CONGRESS

FIRST SESSION

ON

H.R. 5091

A BILL TO AMEND THE MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972, AND FOR OTHER PURPOSES

H.R. 5898

A BILL TO AMEND THE MERCHANT MARINE ACT, 1936, TO PROVIDE AUTHORITY TO THE SECRETARY OF COMMERCE TO ISSUE PERMITS TO CONSTRUCT, OPERATE, AND MAINTAIN CERTAIN OFFSHORE PORT AND TERMINAL FACILITIES

JUNE 12, 14, 25, 26, 27, 28; JULY 11 AND 12, 1973

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OFFSHORE PORTS AND TERMINALS

TUESDAY, JUNE 12, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met pursuant to call at 10:07 a.m., in room 1334, Longworth Office Building, the Honorable Leonor K. Sullivan (chairman of the committee), presiding.

The Chairman. This morning, the Committee on Merchant Marine and Fisheries begins a set of comprehensive hearings addressing the need for, and the various problems connected with, the construction and operation of deep water offshore ports and terminals, for the reception of our increasing oil imports. The purpose of these hearings it to consider the prospective advantages flowing from the construction of such terminals, as well as the disadvantages that may be present in transferring cargoes in ocean areas subject to the stresses of wind, water, and weather.

We have been hearing increasingly in recent years of problems facing our Nation in providing for an adequate energy supply. Various studies have been undertaken in the executive department, in the Congress, and in the private sector, seeking the most viable solutions for these problems. While the results of those studies differ in some respects, there is no disagreement among them as to the fact that in the next few years the energy demand in the United States will rise much more rapidly than the energy supply. Until new sources of energy not now available can be developed for future national use, it is obvious that we must continue to rely on the use of existing fossil fuels, the bulk of which is represented by oil.

I do not at this time intend to discuss other fuels or other methods of supplying our energy needs. Neither do I intend to address myself to methods whereby we can successfully depress the rapidly rising demand curve. I would like merely to point out that whatever successes we may accomplish in those areas for the immediate years ahead, we must continue to rely on oil.

The United States, which is still in the forefront of oil production, was once self-sufficient in its domestic oil supplies. That is no longer the case. In fact, the various studies indicate that within the next decade and a half, oil imports from foreign sources will be needed to supply approximately 35 percent of our energy needs, amounting to approximately 60 percent of the total oil consumed.

Facing that problem, these hearings are designed to supply the committee with information concerning the prospective role that offshore ports and terminals should play in providing for the reception of approximately 15 million barrels per day of oil imports.

Because of the economics involved and the threat to our balance of payments, it seems to be an almost foregone conclusion that if we intend to import this volume of oil, we must carefully consider the utilization of increasingly large tankers and provide for the accommodations which can handle them.

From a cost effective viewpoint, one of the most promising looking alternatives is the construction of offshore ports or some other offshore terminal system.

At the same time, we must not permit ourselves to ignore the potentially adverse impact that too large a dependence on offshore facilities may have on our existing port complexes.

Unintended dislocations and disruptions of present trade patterns might result in such losses to our present port areas as to substantially offset the economic benefits we expect to gain.

In addition, I believe that we must examine the impact of offshore terminals on our maritime shipbuilding program.

There appears to be decided promise that the establishment of offshore terminals, if properly handled, might substantially benefit the U. S. merchant marine and assist in restoring it to its rightful place among the maritime nations, resulting not only in a healthier merchant marine program, but also providing a more substantial base for our national security interests.

In addition to examining the potential impact of offshore ports on our national economic health and on the U. S. merchant marine, we must carefully consider the operational requirements of various offshore terminal designs so that we promote the best safety practices and provide the greatest possible protection of the marine environment from the damage that would result from less than adequate requirements for the transfer and transshipment of the oil cargoes from the offshore facilities to the destinations ashore.

In that regard, we must also consider the potential effect on the coastal areas through which this transshipment must necessarily occur and devise legislation which will best provide for shoreside involvement.

The hearing will begin with testimony from the various Federal departments and agencies with responsibilities affected by offshore ports.

Following the Federal agencies, we will receive testimony from various groups which have been active in preparing proposals for specific offshore terminals, from the representatives of State and local governments and port organizations, from various enterprises which will be affected by an offshore terminal program, and from the public generally, including those groups which are concerned with the potential environmental impact of these facilities.

There are now several bills pending in the Congress covering the general issue of offshore structures of various types, two of them, H.R. 5091 and H.R. 5898, before this committee. H.R. 5091 concerns offshore structures in general and provides for a certification mechanism whereby certain criteria are established and procedures are outlined through which the fullest possible protection of the marine environment is made possible, before the construction or operation of any offshore structure may be undertaken.

H.R. 5898 takes a different tack, in that it relates to offshore port and terminal facilities only and provides for the circumstances under which permits for the construction, operation, and maintenance of such facilities may be issued.

The two bills will be used as vehicles for consideration of the overall problem, but in my opinion, neither bill, standing alone, will meet our overall needs.

[The bills referred to follow:]

[H.R. 5091, 93d Cong., first sess.]

A BILL To amend the Marine Protection, Research, and Sanctuaries Act of 1972, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Marine Protection, Research, and Sanctuaries Act of 1972 is amended by adding at the end thereof the following new title:

"TITLE IV—SITING, CONSTRUCTION, AND OPERATION OF CERTAIN STRUCTURES IN OFF-SHORE COASTAL WATERS

"FINDINGS AND PURPOSE

"SEC. 401. (a) The Congress finds—

"(1) that the construction and operation of large-scale offshore structures, both fixed and floating, designed to be used as ports, terminals, powerplants, airports, research platforms, or for other purposes, are presently planned;

"(2) that there is a nationwide need to oversee the planning, construction, and operation of such facilities to prevent damage to the offshore coastal waters of the United States and the resources therein, including but not limited to, fish, shellfish, and wildlife, marine and coastal resources, and recreational and scenic values, which waters and resources are hereafter in this title referred to as the 'marine environment'; and

"(3) that the planned development of such facilities involves and affects interstate and foreign commerce, fisheries and wildlife, and navigation and will affect United States citizens and the marine environment over a broad geographical area.

"(b) The purpose of this title is to provide for the fullest possible protection of the marine environment in order to prevent an unacceptably adverse impact from the construction and operation of such facilities by authorizing and directing the Secretary of Commerce to issue a certification that in respect to any structure all possible precautions have been taken to protect the marine environment, or to deny such certification if the facility is adjudged by the Secretary to pose an unreasonable threat to the integrity of the marine environment.

"DEFINITIONS

"SEC. 402. For the purposes of this title the term—

"(a) 'Secretary' means the Secretary of Commerce.

"(b) 'Structure' means any artificial island or other stationary structure, either fixed or floating, located in the offshore coastal waters of the United States and which is intended for use, or used, as a port, terminal, powerplant, airport, or research platform, or for any other purpose: *Provided,* That it does not mean structures designed and used for exploring for, developing, removing, or transporting resources from those waters or from the seabed or the subsoil thereof beneath those waters.

"(c) 'Person' means any private person, individual, association, corporation, or entity, or any officer, employee, agent, department, agency, or instrumentality of the Federal Government, of any State or local unit of government.

"(d) 'Offshore coastal waters of the United States' means the high seas beyond the territorial seas of the United States, superjacent to the 'Continental Shelf' of the United States, as the latter term is defined in article I of the Convention on the Continental Shelf (15 U.S.T. 471; TIAS 5578).

"CERTIFICATION

"SEC. 403. (a) No person shall construct or operate a structure until the Secretary shall have certified that the activity involved will not result in an unacceptably adverse impact on the marine environment, and that all possible precautions have been taken to minimize any adverse impact that may result. Certification shall relate to site selection, method and type of construction, and operation of the structure.

"(b) The Secretary may give certification, after an adjudication on the record, in accordance with the requirements of subchapter 11, chapter 5, title 5, United States Code, to any such structure upon a showing by the applicant therefor that neither the location, the construction, nor the operation of the proposed structure will pose an unreasonable threat to the integrity of the marine environment, and that all possible precautions have been taken to minimize any adverse impact that may result. Such hearing may be combined with any other required hearing and the Secretary shall coordinate his procedures with those of other involved agencies. The applicant shall submit reasonably detailed plans of the structure at least two years prior to the expected date of the beginning of construction: *Provided*, That as to those structures which are not in the construction phase on the effective date of this title but nonetheless will reach the construction phase at any time within two years of the effective date, the applicant shall submit plans to the Secretary as soon as possible after this title goes into effect. The Secretary shall establish a reasonable fee to be paid by the applicant sufficient to cover the administrative costs incurred in evaluating an application for certification.

"(c) The Secretary shall establish and apply criteria for reviewing and evaluating such structures, and in establishing or revising such criteria, shall consider, but is not limited in his consideration to, the following:

"(1) the need for siting such structure offshore:

"(2) the effect of such structure on human health and welfare, including esthetic and recreational values:

"(3) the effect of such structure on fish, plankton, shellfish, and wildlife resources;

"(4) the effect of such structure on the oceanographic currents or wave patterns and upon nearby shorelines and beaches;

"(5) the effect on alternate uses of the oceans and navigable waters, such as scientific study, fishing, and other living and nonliving resources exploitation:

"(6) the dangers to such structure occasioned by waves, winds, and weather and the steps which can be taken to protect against such dangers;

"(7) the effect of such structure on navigation; and

"(8) such other considerations which the Secretary deems appropriate or necessary to fully evaluate any structure. In establishing criteria, the Secretary shall consult with Federal, State, and local officials and interested members of the general public, as may appear appropriate to the Secretary.

"(d) In reviewing applications for certification, the Secretary shall make provision for consultation with any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Comments of a substantive nature shall be incorporated as part of the certification.

"PUBLIC ACCESS TO INFORMATION

"SEC. 404. (a) Copies of any communications, documents, reports, or information received or sent by any applicant shall be made available to the public upon identifiable request, and at reasonable cost, unless such information may not be publicly released under the terms of subsection (b) of this section.

"(b) The Secretary shall not disclose information obtained by him under this Act which concerns or relates to a trade secret referred to in section

1905 of title 18, United States Code, except that such information may be disclosed—

"(1) to other Federal Government departments, agencies, and officials for official use upon request;

"(2) to committees of Congress having jurisdiction over the subject matter to which the information relates;

"(3) in any judicial proceeding under a court order formulated to preserve the confidentiality of such information without impairing the proceedings;

"(4) to the public in order to protect their health and safety after notice and opportunity for comment in writing or for discussion in closed session within fifteen days by the party to which the information pertains (if the delay resulting from such notice and opportunity for comment would not be detrimental to the public health and safety).

Nothing contained in this section shall be deemed to require the release of any information described by subsection (b) of section 552, title 5, United States Code, or which is otherwise protected by law from disclosure to the public.

"NAVIGATIONAL EFFECTS

"SEC. 405. (a) In evaluating the effect of any proposed structure on navigation, the Secretary shall consult with and obtain the views of the Secretary of the Department in which the Coast Guard is operating.

"(b) The Secretary of the Department in which the Coast Guard is operating shall have authority to promulgate and enforce such reasonable regulations with respect to lights and other warning devices, safety equipment, and other matters relating to the promotion of safety of life and property on structures referred to in section 303(b) or on the waters adjacent thereto, as he may deem necessary.

"(c) The Secretary of the Department in which the Coast Guard is operating may mark for the protection of navigation any such structure whenever the owner has failed suitably to mark the same in accordance with regulations issued hereunder, and the owner shall pay the cost thereof. Any person who shall fail or refuse to obey any of the lawful rules and regulations issued hereunder shall be guilty of a misdemeanor and shall be fined not more than $500 for each offense. Each day of the continuing violation shall constitute a separate offense.

"RELATIONSHIP TO OTHER LAWS

"SEC. 406. No action taken pursuant to this title shall relieve, exempt, or immunize any person from any other requirements imposed by Federal, State, or local laws, regulations, or ordinances, including, but not limited to, the National Environmental Policy Act of 1969, as amended.

"PENALTY

"SEC. 407. (a) Any person subject to the jurisdiction of the United States who, after the effective date of this title, begins to construct, constructs, or operates a structure without a certification as required herein shall be liable to a civil penalty of not more than $50,000, to be assessed by the Secretary. Each day of a continuing violation shall constitute a separate violation.

"(b) No penalty shall be assessed under this section until the person charged has been given notice and an opportunity to be heard. Upon failure of the offending person to pay an assessed penalty, the Attorney General, at the request of the Secretary, shall commence action in the appropriate district court of the United States to collect the penalty and to seek such other relief as may be appropriate.

"(c) The district courts of the United States shall have jurisdiction to enjoin the construction or operation, or both, of any structure which has not been certified as required by this title.

"(d) The injunctive relief provided by this section shall not restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of or compliance with any standard or limitation or to seek any other relief (including relief against the Secretary).

"AUTHORIZATION FOR APPROPRIATION

"SEC. 408. There is authorized to be appropriated $1,000,000 for the fiscal year 1974 and for each of the next two fiscal years thereafter for administration of this title, and for succeeding fiscal years only such sums as may be specifically authorized by law."

DEPARTMENT OF THE NAVY,
OFFICE OF LEGISLATIVE AFFAIRS,
Washington, D.C. June 13, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington. D.C.

DEAR MADAM CHAIRMAN: Your request for comment on H.R. 5091, a bill "To amend the Marine Protection, Research, and Sanctuaries Act of 1972, and for other purposes." has been assigned to this Department by the Secretary of Defense for the preparation of a report expressing the views of the Department of Defense.

This bill would place with the Secretary of Commerce the authority for certification of the acceptability to the marine environment the siting, construction and operation of structures to be used for ports, terminals, powerplants, airports, research platforms or other purposes in the high seas beyond the territorial seas of the United States, superjacent to the Continental Shelf of the United States.

H.R. 5091 is considered objectionable for the following reasons:

a. There is the significant danger that the bill would be interpreted as providing for unilateral extension of the United States' jurisdiction beyond the 12-mile contiguous zone provided for in the 1958 Convention on the Territorial Sea and Contiguous Zone. An assertion of sovereignty over "offshore coastal waters", which is now included in the bill, would contravene international law. Also, while the United States may prohibit activities by its own citizens, even on the high seas, the bill (section 407(a)) does not limit its jurisdiction to citizens. Instead, it applies to "any person subject to the jurisdiction of the United States" and permits the assessment of a civil penalty of up to $50,000 per day for each day of the violation. It is conceivable that "any person subject to the jurisdiction of the United States" could be construed to apply to an alien who, after performing the prohibited acts, enters the territory of the United States. Additionally, a U.S. court could construe the prohibited acts as an encroachment on the territorial integrity of the United States and thus apply it to aliens who place structures on or over the Continental Shelf.

It is the policy of the United States, neither to make nor to recognize unilateral claims to sovereignty beyond the territorial sea except as provided in customary and conventional international law (9 mile fishing zone and contiguous zone for enforcement of customs, fiscal, immigration and sanitary regulations). In order to preserve a narrow territorial sea throughout the world, which is essential to our security interests, the United States has consistently protested the unilateral extension of coastal-state sovereignty and jurisdiction by other nations, and has steadfastly maintained that such matters should be dealt with on a multinational basis at the forthcoming Law of the Sea Conference. The enactment of this bill with its assertions of sovereignty over marine areas seaward of the territorial sea could erode the United States position at the Conference.

For an example of the manner in which this jurisdictional issue may be addressed without prejudice to United States Law of the Sea interests in a specific case, the Committee is referred to the proposed Deepwater Port Facilities Act of 1973 contained in H.R. 7501. The approach there taken involves first a determination that the construction and operation of superports is a reasonable use of the high seas, and second a prohibition of construction or operation of such facilities by United States nationals without a license coupled with a prohibition of the transport of commodities or other materials between the United States and an unlicensed facility. Both the scope and the relatively indefinite nature of the activities sought to be regulated by the subject bill seem to preclude a satisfactory resolution of the jurisdictional issues raised by means of a similar approach.

b. The proposed legislation makes no provision for a national defense exclusion in the certification of offshore artificial structures. While the Department of Defense does and should consider the effects of its actions on the environment, it appears inappropriate, as provided in Section 403(c), for the Secretary of Commerce to establish and apply criteria for evaluating the need of an artificial structure offshore by the Department of Defense.

c. The bill duplicates and overlaps functions and responsibilities of other agencies such as Coast Guard, Department of Defense (Navy and Corps of Engineers) and the Environmental Protection Agency (EPA).

d. A strict interpretation of the definition of "structure" (page 3, line 12) might well include research vessels, platforms and buoys anchored, moored or employed in the coastal waters. In the case of military platforms to be constructed in the applicable coastal waters, the requirement contained in Section 403(b) to submit "reasonably detailed plans at least two years prior to the expected date of the beginning of construction" could be unbearably restrictive depending, of course, on the interpretation of the word "reasonable". In most cases it would be highly improbable that *detailed* plans would be in hand two years ahead of time.

e. The bill, in effect, provides a single department veto power over offshore structures based upon marine environment protection as the sufficient condition upon which to exercise such power regardless of other considerations. Thus the bill could well block the best solution to complex, interdependent problems involving the Nation's security, economic development, energy and natural resource supplies and transportation systems as well as those of the environment.

In his energy message to the Congress in April of this year, the President proposed the development of deepwater ports in answer to the problem of importing, cheaply and with minimum damage to the environment, the large quantities of oil we will be needing in the forseeable future. In implementation of this portion of his message, there has been transmitted to the Congress by executive communication from the Secretary of the Interior the proposed Deepwater Port Facilities Act of 1973 which has now been introduced as H.R. 7501. This is a comprehensive proposal representing the coordinated effort of the departments and agencies of the executive branch to meet the many problems associated with the regulation and construction of such facilities. In our view, the provisions of H.R. 7501 furnish a more adequate and effective means for dealing with these problems than H.R. 5091.

In view of the above, the Department of the Navy, on behalf of the Department of Defense is opposed to enactment of H.R. 5091.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee and that enactment of H.R. 7501 would be in accord with the program of the President.

For the Secretary of the Navy.

Sincerely yours,

E. H. WILLETT,
Captain, U.S. Navy.
Deputy Chief.

FEDERAL MARITIME COMMISSION,
Washington, D.C., August 22, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

DEAR MADAM CHAIRMAN: This is in response to your request for the views of the Federal Maritime Commission with respect to H.R. 5091, a bill To amend the Marine Protection, Research, and Sanctuaries Act of 1972, and for other purposes.

Inasmuch as the bill does not affect the responsibilities or jurisdiction of the Commission, we express no views as to its enactment.

The Office of Management and Budget has advised that there would be no objection to the submission of this letter from the standpoint of the Administration's program.

Sincerely,

HELEN DELICH BENTLEY,
Chairman.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., June 12, 1973.

Hon. LEONOR K. (Mrs. John B.) SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives
Washington, D.C.

DEAR MADAME CHAIRMAN: This responds to your request for this Department's views on H.R. 5091 and H.R. 5898, bills to authorize the siting of offshore structures.

We recommend that neither bill be enacted but that the Administration's proposed "Deepwater Port Facilities Act of 1973," H.R. 7501, be enacted instead.

All three bills would establish a licensing system for deepwater ports off the United States Coast beyond the territorial sea. A principal element in evaluating license applications under all three bills is the consideration of the environmental impact. On this point the Administration's bill contains significantly more detail and we prefer it for that reason.

A principal difference between the Administration's bill and the ones pending before this Committee is that our bill gives Federal jurisdiction to the Department of the Interior, whereas H.R. 5091 and H.R. 5898 give jurisdiction to the Department of Commerce. Three factors led to the Administration's decision: First, Interior has the fundamental federal responsibility for assuring the Nation an adequate supply of energy. This entails supervising the oil import program, administering all emergency fuel supply programs and providing analytical support for the Oil Policy Committee. We also lease all energy resources on public lands and the outer continental shelf. At the President's direction we have recently created an Office of Energy Conservation.

The second factor is the expertise we have developed in supervising the construction and operation of oil drilling platforms on the outer continental shelf. These platforms, connected to the mainland by pipeline, are very similar to the type of facility we expect to license under this new legislation.

The third factor is the requirement in our proposal which we feel is extremely important, that the Secretary consult with the Governors of States off whose coast a facility is proposed to be located "to ensure that the operation of the facility and directly related land-based activities would be consistent with the State land use program." Since the Administration's Land Use Planning proposal gives Interior federal responsibility for approving State land use programs, it was felt that Interior was in the best position to coordinate deepwater port licensing with State land use plans.

The Office of Management and Budget has advised that there is no objection to the presentation of this report and that enactment of H.R. 7501 would be in accord with the program of the President.

Sincerely yours,

JACK O. HORTON,
Assistant Secretary of the Interior.

INTERSTATE COMMERCE COMMISSION,
Washington, D.C., August 14, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

DEAR CHAIRMAN SULLIVAN: Thank you for your recent letter requesting our views on H.R. 5091, a bill, "To amend the Marine Protection, Research, and Sanctuaries Act of 1972, and for other purposes".

Upon analysis of the proposed legislation, we have concluded that its provisions do not directly affect any functions of the Interstate Commerce Commission under existing law. Therefore, we have no comment to make on this legislation.

Sincerely yours,

George M. Stafford,
Chairman.

The General Counsel of the Treasury,
Washington, D.C., June 14, 1973.

Hon. Leonor K. Sullivan,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

Dear Madam Chairman: Reference is made to your request for the views of this Department on H.R. 5091, "To amend the Marine Protection, Research, and Sanctuaries Act of 1972, and for other purposes."

The bill would provide that no person could construct or operate an artificial island or other stationary structure in the offshore coastal waters of the United States until the Secretary of Commerce had certified that the activity involved would not result in an unacceptably adverse impact on the marine environment. The bill also provides a civil penalty of not more than $50,000 for each violation of the certification requirement, with each day of a continuing violation constituting a separate offense.

In lieu of H.R. 5091 we recommend enactment of H.R. 7501, "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities", which was included in the President's April 18, 1973 Message to the Congress on Energy Policy.

The Department has been advised by the Office of Management and Budget that there is no objection from the standpoint of the Administration's program to the submission of this report to your Committee and that enactment of H.R. 7501 would be in accord with the program of the President.

Sincerely yours,

Edward C. Schmidt,
General Counsel.

[H.R. 5898, 93d Cong., first sess.]

A BILL To amend the Merchant Marine Act, 1936, to provide authority to the Secretary of Commerce to issue permits to construct, operate, and maintain certain offshore port and terminal facilities

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Merchant Marine Act, 1936 (chapter 27 of title 46, United States Code), is amended by adding at the conclusion thereof the following new title:

"TITLE XIII—OFFSHORE PORT AND TERMINAL FACILITIES

"Sec. 1301. (a) No port or terminal facility shall be constructed, operated, or maintained by any person beyond the territorial waters of the United States, unless such person has obtained a permit for that purpose under this section. Such permits may be issued by the Secretary of Commerce under such regulations and upon such conditions as that Secretary may prescribe.

"(b) In the issuance of any permit under this section, the Secretary of Commerce shall—

"(1) take into account the need for such port or terminal facility as a means of supplying the energy needs of the Nation;

"(2) consider the environment impact of any such port or terminal facility;

"(3) consider the availability of alternative sites and methods of construction; and

"(4) provide for such public hearings as he deems necessary to assure thorough consideration of the factors identified in this subsection."

Department of the Navy,
Office of Legislative Affairs,
Washington, D.C. June 13, 1973.

Hon. Leonor K. Sullivan,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

Dear Madam Chairman: Your request for comment on H.R. 5898, a bill "To amend the Merchant Marine Act, 1936, to provide authority to the Secretary of Commerce to issue permits to construct, operate, and maintain certain offshore port and terminal facilities," has been assigned to this Department by the Secretary of Defense for the preparation of a report thereon expressing the views of the Department of Defense.

This bill would add to the Merchant Marine Act, 1936, a new Title XIII, "Offshore Port and Terminal Facilities". Section 1301(a) of the bill would vest the Secretary of Commerce with control over construction, operation and maintenance of all ports or terminal facilities beyond the territorial waters of the United States, by prohibiting such action by "any person" without a permit therefor issued by the Secretary of Commerce under such regulations and upon such conditions as he may prescribe. Section 1301(b) prescribes the factors to be considered by the Secretary of Commerce in issuing any permit under the section.

In his energy message to the Congress in April of this year, the President proposed the development of deepwater ports in answer to the problem of importing, cheaply and with minimum damage to the environment, the large quantities of oil we will be needing in the forseeable future. In implementation of this portion of his message, there has been transmitted to the Congress by executive communication from the Secretary of the Interior the proposed Deepwater Port Facilities Act of 1973 which has now been introduced as H.R. 7501. This is a comprehensive proposal representing the coordinated effort of the departments and agencies of the executive branch to meet the many problems associated with the regulation and construction of such facilities. In our view, the provisions of H.R. 7501 furnish a more adequate and effective means for dealing with these problems than H.R. 5898.

In view of the above, the Department of the Navy, on behalf of the Department of Defense is opposed to enactment of H.R. 5898.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report for the consideration of the Committee and that enactment of H.R. 7501 would be in accord with the program of the President.

For the Secretary of the Navy.

Sincerely yours,

E. H. Willett,
Captain, U.S. Navy,
Deputy Chief.

Interstate Commerce Commission,
Washington, D.C., August 14, 1973.

Hon. Leonor K. Sullivan,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

Dear Chairman Sullivan: Thank you for your recent letter requesting our views on H.R. 5898, a bill, "To amend the Merchant Marine Act, 1936, to provide authority to the Secretary of Commerce to issue permits to construct, operate, and maintain certain offshore port and terminal facilities".

Upon analysis of the proposed legislation, we have concluded that its provisions do not directly affect any functions of the Interstate Commerce Commission under existing law. Therefore, we have no comment to make on this legislation.

Sincerely yours,

George M. Stafford,
Chairman.

DEPARTMENT OF STATE,
Washington, D.C., June 13, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

DEAR MADAM CHAIRMAN: The Secretary has asked me to reply to your letter of March 22, 1973, requesting comment on H. R. 5898, a bill "To amend the Merchant Marine Act, 1936, to provide authority to the Secretary of Commerce to issue permits to construct, operate, and maintain certain offshore port and terminal facilities."

The Department notes that H. R. 5898 would amend the Merchant Marine Act, 1936 (Chapter 27 of Title 46, United States Code) by adding at the conclusion thereof the following new Title: "Title XIII—Offshore Port and Terminal Facilities." The Administration forwarded to Congress on April 18, 1973, a draft bill (H. R. 7501) "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities." The Department supports the Administration's bill which provides a comprehensive legislative approach for the construction and operation of deepwater port facilities. Consequently, we are opposed to H. R. 5898.

The Office of Management and Budget advises that there is no objection to the submission of this report and that enactment of H. R. 7501 would be in accord with the program of the President.

Sincerely yours,

MARSHALL WRIGHT,
Assistant Secretary for Congressional Relations.

THE GENERAL COUNSEL OF THE TREASURY,
Washington, D.C., June 20, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries,
House of Representatives,
Washington, D.C.

DEAR MADAM CHAIRMAN: Reference is made to your request for the views of this Department on H.R. 5898, "To amend the Merchant Marine Act, 1936, to provide authority to the Secretary of Commerce to issue permits to construct, operate, and maintain certain offshore port and terminal facilities."

The bill would add a new title XIII to the Merchant Marine Act, 1936 to require that no port or terminal facility shall be constructed, operated, or maintained by any person beyond the territorial waters of the United States, unless he has obtained a permit from the Secretary of Commerce.

In lieu of H.R. 5898 the Department recommends enactment of H.R. 7501, "To amend the Outer Continental Shelf Lands Act and to authorize the Secretary of the Interior to regulate the construction and operation of deepwater port facilities", which was included in the President's April 18, 1973 Message to the Congress on Energy Policy.

The Department has been advised by the Office of Management and Budget that there is no objection from the standpoint of the Administration's program to the submission of this report to your Committee and that enactment of H.R. 7501 would be in accord with the program of the President.

Sincerely yours,

EDWARD C. SCHMIDT,
General Counsel.

The CHAIRMAN. Assuming that we receive all the necessary information during the course of these hearings. I foresee a combination of the two approaches represented by these two bills, with additional provisions to cover all facets of the overall problem.

In addition, I think I should state that, since the problem area also impinges upon the responsibilities of other House committees, I have discussed the overall problem with the chairmen of those committees, and I can state that we all intend to work together, consistent with the rules of the House, to produce legislation, whether in one bill or in several, which will serve the overall needs.

I look forward with interest to the hearings which we are now undertaking. Because of the extensive time which will be involved, I have asked the Honorable Thomas N. Downing, Chairman, Subcommittee on Oceanography, to share with me the responsibility for the conducting of these hearings. Not only is Mr. Downing's subcommittee responsible for matters concerning the ocean and ocean resources generally, but it was from his subcommittee that this committee developed and reported the Coastal Zone Management Act of 1972, which, when implemented, will have a significant bearing on this problem.

In addition, of course, Mr. Downing is a senior member of the Subcommittee on Merchant Marine and in the past has served on both the Subcommittee on Coast Guard and Navigation, and the Subcommittee on Fisheries and Wildlife Conservation and the Environment.

I welcome his participation with me in chairing these hearings, and before recognizing the first witness, I will call on Mr. Downing for whatever comments he might like to make.

Mr. DOWNING. Thank you, Madam Chairman.

I am greatly honored that the chairman has asked me to join her in sharing the responsibility for the conduct of this series of hearings on offshore ports and terminals.

Rather than going over the same ground that the chairman has so adequately covered, I would simply say that in my opinion it is not a question of whether we should go forward with some type of offshore transfer capability but what direction our efforts should take.

I am particularly interested in the potential impact of an offshore terminal program on the future of the U.S. merchant marine, on U.S. shipyards and on our ability to keep price increases at an absolute minimum for consumers.

In addition, I want to be sure that whatever solutions we arrive at provide for the best possible protection to our marine environment and our coastal areas.

One of the significant things we must explore is the potential relationship between the offshore terminals and the adjacent shore areas, including present port operations. Considerations of that interface makes it all the more apparent how valuable a piece of legislation the Coastal Zone Management Act of 1972 could be, if only we could get a little cooperation from the administration in its implementation. I intend to pursue this issue as the hearings develop.

Thank you very much.

The CHAIRMAN. Thank you, Mr. Downing.

The first witness to be heard this morning is a representative of the Department of the Interior. That Department is deeply involved in seeking solutions to the Nation's energy problems, and has the present responsibility for the leasing of the Outer Continental Shelf areas for the recovery of oil.

In addition, the Department of the Interior has been proposed as the nucleus of a new Department of Energy and Natural Resources, in which the President is proposing to repose even more responsibility in the energy field.

I will ask Assistant Secretary Jack O. Horton to come forward to the witness chair.

If you will introduce the gentleman who accompanies you, for the record, it will be helpful.

Mr. HORTON. I am happy to do so.

I have on my right Jared Carter, the Deputy Under Secretary, and on my left Mr. John Allen, the Assistant Legislative Counsel.

STATEMENT OF HON. JACK HORTON, ASSISTANT SECRETARY FOR LAND AND WATER RESOURCES, DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY JARED CARTER, DEPUTY UNDER SECRETARY AND JOHN ALLEN, ASSOCIATE LEGISLATIVE COUNSEL

Mr. HORTON. Madam Chairman, we appreciate this opportunity to testify on the subject of deepwater ports. As you know, the Department of the Interior is deeply concerned with developing ways to bridge the gap which is growing between the Nation's supply of and demand for energy.

We are concentrating on encouraging more intensive development of domestic reserves of oil and gas, and on ways to utilize our vast coal reserves without degrading our environment.

We are devoting efforts toward conserving energy. But, regardless of how successful we are in these efforts it is clear to us, as it is to you Madam Chairman as you point out in your statement, and to most observers that we are going to have to rely on increased imports of petroleum to meet the demand for energy in the coming few decades.

Projections always vary, but it seems pretty safe to say that by 1985, we will be importing at least one-half of our total domestic demand for oil.

Most of that imported oil will come from the Middle East and Africa and will be brought into east coast and gulf coast ports.

A second, interrelated trend is the increase in tanker size.

In 1955, Spyro Niarchos launched the largest tanker then afloat—47,000 deadweight tons.

Recently the *Globtic Tokyo* came into service at 477,000 dwt.

Tankers of 530,000 dwt have been ordered by Shell Oil Co. and a letter of intent has been signed for a 706,000 dwt tanker.

We are deeply concerned about the impact these trends will have on existing port facilities and on the environment.

In 1970, 2.5 million barrels of oil a day were brought into east coast ports by a tanker fleet averaging 30,000 dwt.

By 1980, the east coast could be importing as much as 6.6 million barrels crude oil per day. Of the principal tanker ports on the east coast only Portland, Maine, can accommodate fully loaded tankers exceeding 55,000 deadweight tons. Even if average tanker size went to 50,000 dwt, tanker calls to east coast ports in 1980 would be double the 1970 level.

This magnitude of small tanker traffic would necessarily result in a substantial increase in oil pollution from groundings and collisions.

The prospect of ever increasing numbers of small tankers plying coastal waters and crowding into existing harbors is highly disturbing.

The alternative spelled out in the legislation which the Department has proposed as well as in bills before this committee is to license the construction of deepwater terminals off our coasts. Tankers would tie up to them and off load their oil into a pipeline connected to the mainland.

This has two principle advantages. First it would reduce port congestion and the attendant risk of oil spill from collision or grounding.

Also, if a spill did occur at a deepwater port, there is more time to clean it up before it reaches the beaches and sensitive estuarine areas.

The second obvious advantage of deepwater ports is that they can accommodate deepdraft tankers. These tankers, known as VLCC's for "very large crude carriers," are generally classified as 200,000 dwt and upward. They require from 60 feet of water for the smallest to over 100 feet of water for the largest.

The Atlantic and gulf coast ports are relatively shallow waters and the surrounding seabed slopes off gradually. The Port of Houston for example is 110 miles away from water 100 feet deep.

VLCC's are unquestionably here to stay for the very simple reason that they can move oil for significantly less cost, particularly on the long haul from the Persian Gulf. These tankers will be used. The question is simply whether these large tankers will unload in the Carribean or Canada for transshipment to the United States or whether they will bring their cargoes directly to this country via deepwater ports off our own coasts.

The construction and operation of our own deepwater ports will provide substantial savings for the American consumer.

In addition to economic advantages, these large newer tankers could offer environmental advantages in the form of advanced pollution control devices such as segregated ballast systems, and improved navigation and fire control systems.

The administration's proposal authorized the Secretary to include as a condition of the deepwater port license measures to minimize or prevent pollution of the surrounding waters.

Such measures would relate to the design and operation of vessels using the structure. Notwithstanding such requirements there are economic incentives to vessels owners to incorporate these devices. A barrel of oil spilled is a barrel that cannot be sold.

Moreover, the Federal Water Quality Improvement Act of 1970 assigns legal liability to vessel owners up to $14 million for oil spills. That law is specifically extended to facilities which would be licensed under the administration's proposal.

Segregated ballast tanks cut down turn around times by permitting unloading of ballast and loading of cargo and vice versa simultaneously.

When you have a tanker costing $100 million every day of delay eliminated means real savings.

I think it is important to note at this point that the technology for unloading large tankers in deepwater and piping the oil ashore is well established. The single point mooring technique has been in successful use since 1959 and presently there are more than 100 in use around the world.

An alternative means of accommodating deepdraft tankers would be to deepen existing channels. We do not in general favor this alternative. While it might replace small tankers with one large one, that large tanker would be exposed to a greater risk of grounding, because of its greater draft, and would be exposed to collision from other vessels.

In most cases, particularly the gulf coast where the shelf slopes off very gradually, dredging deeper channels would be more costly economically and would be prohibitive in terms of environmental cost.

Having established what I believe is a strong case for deepwater ports, I would like to make a few brief points about what form the legislation should take.

First, a word about why we consider legislation to be necessary. There are basically two reasons:

First, there is enough uncertainty about existing federal law that we do not believe we have a clear mandate to grant a license to authorize the construction and operation of deepwater ports off U.S. coasts.

The second reason is to assure that deepwater ports built off our coast meet specific environmental and navigational safeguards.

For that reason, one purpose of the bill is to prohibit transporting any cargo to the United States from a deepwater port off our coast unless that port is licensed under the act.

I should note at this point that we believe the proper basis for this Federal jurisdiction beyond the 3-mile limit is the principle in international law that all nations can make reasonable uses of the high seas.

We consider deepwater ports to be a reasonable use and one of the conditions of the license should be to make sure that the operation of the facility does not violate that principle.

A principal difference between the administration's bill and the one pending before this committee is that our bill gives Federal jurisdiction to the Department of the Interior, whereas H.R. 5091 and H.R. 5898 would give jurisdiction to the Department of Commerce.

Three factors led to the administration's decision: First, Interior has the fundamental federal responsibility for assuring the Nation an adequate supply of energy. This entails supervising the oil import program, administering all emergency fuel supply programs and providing analytical support for the present Oil Policy Committee.

We also lease all energy resources on public lands and the Outer Continental Shelf. At the President's direction we have recently created an Office of Energy Conservation.

The second factor is the expertise we have developed in supervising the construction and operation of oil drilling platforms on the Outer Continental Shelf.

These platforms, connected to the mainland by pipeline, are very similar to the type of facility we expect to license under this new legislation.

The third factor is the requirement in our proposal which we feel is extremely important, that the Secretary consult with the Governors of States off whose coast a facility is proposed to be located to insure that the operation of the facility and directly related land-based activities would be consistent with the State land use program.

Since the administration's land use planning proposal gives Interior Federal responsibility for approving State land use programs, it was felt that Interior was in the best position to coordinate deepwater port licensing with the State land use plans.

I would like to underline this provision by stating that our deepwater port proposal requires that any structure licensed under the act be consistent with the coastal State's land use planning program.

We believe that these deepwater ports will produce onshore development. We believe that this development, if properly controlled will be beneficial to the people of the State. We urge all States to develop the proper controls through their own land use planning legislation.

We would not usurp the role of the State in land use planning. Nor would be usurp industry's planning role: That is to say except from an environmental or safety standpoint, where these facilities should be located, how big they should be and, how they should be designed.

It is not often we get an opportunity to propose legislation which will protect the environment, save money for the consumer and forestall the energy crisis. I think deepwater port legislation can do all three.

I have discussed how deepwater ports will: (1) Reduce port congestion and groundings, (2) allow more time to clean up what spills do occur, and (3) accommodate, without dredging existing channels, deep draft tankers; and thereby realize the cost savings and advanced pollution control benefits they offer.

We will be happy to try to answer any questions you might have.

Thank you.

The CHAIRMAN. Thank you, Mr. Horton.

We will proceed with the questioning under the 5-minute rule, so that all the members may have a chance to question you, and then, if we do not finish, and we still have another witness to hear this morning, we will submit some questions that we think need answering to you in writing.

I have just a couple of questions here.

What do you foresee as an actual demand in 1985 for energy needs in equivalence of millions of barrels per day of crude oil?

Mr. HORTON. Madam Chairman, the Department estimates that by 1980 we can expect as much as 8.5 million barrels of oil from imported sources.

The CHAIRMAN. Do you think that is the actual demand or that is the amount that we can receive?

Mr. HORTON. Well, I think that represents our projected demand figures.

The CHAIRMAN. How much of that demand will be supplied by fuel sources other than crude oil?

Mr. HORTON. I will ask Mr. Carter if he has that figure, the first figure was for crude oil.

Mr. CARTER. Madam Chairman, without attempting to be exactly precise—did you say for 1985?

The CHAIRMAN. Yes, I know you cannot be precise, but I think we need figures. I do not believe Mr. Horton answered the question as to what he believes is the demand for 1985. If you could estimate that, we would appreciate it.

Mr. CARTER. I believe in 1985 demand projections are in the neighborhood of 25 million barrels per day of which approximately 52 percent or in the area of 50 percent or a little over, will have to be imported.

The CHAIRMAN. That is crude oil only?

Mr. CARTER. Yes, ma'am.

The CHAIRMAN. All right, then how much of that demand will be supplied by fuel sources other than crude oil?

Mr. CARTER. That is what we project as the crude oil demand.

The CHAIRMAN. How much of that crude oil supply will come from domestic production? You said you expected 50 percent to be imported. I think that answers that, and do you know how much you can expect from Venezuela?

Mr. HORTON. Madam Chairman, with your permission, I will submit for the record a chart of petroleum energy balances prepared by the Department of the Interior in which various projections for 1975, 1980 and 1985 are made for domestic supply, Canadian crude, domestic demand, et cetera. These estimates are from our report "United States Energy Through the Year 2000."

The CHAIRMAN. Fine. Without objection, we will be happy to have those figures that you can supply.

[The following information was supplied in response to the foregoing:]

PETROLEUM IMPORTS FROM LATIN AMERICA

In the past, the U.S. received most of its petroleum imports from Venezuela; however, due to limited reserves it is unlikely that Venezuela will be able to provide significant increases in production. Total oil production in Latin America is projected to grow at a rate of only 1.7 percent per year to 1985, while demand for oil in Latin America is expected to grow at 4.7 percent annually. Oil production in Latin America is estimated to be 6.8 million barrels per day by 1985 but local consumption is expected to exceed 5.0 million barrels per day leaving less for export to the U.S. than we receive now.

TABLE 6.—UNITED STATES CONSUMPTION FOR ENERGY RESOURCES BY MAJOR SOURCES, 1971, ACTUAL, WITH PROJECTIONS TO THE YEAR 2000

	1971	1975	1980	1985	2000
Petroleum (includes natural gas liquids):					
Million barrels	5,523	6,340	7,615	9,140	12,985
Million barrels per day	15.1	17.4	20.9	25.0	35.6
Trillion Btu	30,492	35,090	42,190	50,700	71,380
Percent of gross energy inputs	44.1	43.8	43.9	43.5	37.2
Natural Gas:					
Billion cubic feet	22,050	24,462	26,169	27,537	32,959
Trillion Btu	22,734	25,220	26,980	28,390	33,980
Percent of gross energy inputs	33.0	31.4	28.1	24.3	17.7
Coal (bituminous, anthracite, lignite):					
Thousand short tons	510,800	565,000	665,000	893,000	1,310,000
Trillion Btu	12,560	13,825	16,140	21,470	31,360
Percent of gross energy inputs	18.2	17.2	16.8	18.4	16.3
Hydropower:					
Billion kilowatt-hours	266.3	350	420	470	700
Trillion Btu	2,798	3,570	3,990	4,320	5,950
Percent of gross energy inputs	4.1	4.4	4.2	3.7	3.1
Nuclear power:					
Billion kilowatt-hours	37.9	240	630	1,130	5.470
Trillion Btu	405	2,560	6,720	11,750	49,230
Percent of gross energy inputs	.6	3.2	7.0	10.1	25.7
Total gross energy Inputs:					
Trillion Btu	68,989	80,265	96,020	116,630	191,900

PETROLEUM SUPPLY FORECAST

Table 16, Estimated petroleum supply schedule, 1971 actual with projections to the year 2000 indicates the sources of supply considered feasible between 1971 and 2000.

In 1971 domestic supply accounted for 74.0 percent of our consumption and imports accounted for 26.0 percent. In 2000 if the present trends and policies continue 16.9 percent of our requirements will be met by lower 48 supply, 10.0 percent Alaskan North Slope oil, and 2.8 percent by synthetic liquids, giving domestically produced oil 29.7 percent of our total market. If additional liquid hydrocarbons are to be available to meet projected consumption, they will come from supplemental supplies.

Between now and 1980, these supplemental supplies must come either in the form of imported oil from foreign sources or incremental production from con-

TABLE 16.—ESTIMATED PETROLEUM SUPPLY SCHEDULE, 1971 ACTUAL WITH PROJECTIONS TO THE YEAR 2000

	1971	1975	1980	1985	2000
Total supply:					
Million barrels	5,523	6,340	7,615	9,140	12,985
Million barrels/day	15.1	17.4	20.8	25.0	35.5
Trillion Btu	30,492	35,090	42,190	50,700	71,380
Domestic supply:					
Lower 48 supply:[1]					
Million barrels	4,117	4,000	3,740	3,345	2,200
Million barrels per day	11.3	11.0	10.2	9.2	6.0
Trillion Btu	22,569	22,130	20,720	18,550	12,090
Alaskan North Slope:					
Million barrels			550	730	1,295
Million barrels per day			1.5	2.0	3.5
Trillion Btu			3,050	4,050	7,120
Synthetic liquids:					
Million barrels				180	365
Million barrels per day				.5	1.0
Trillion Btu				1,000	2,010
Total domestic supply:					
Million barrels	3,117	4,000	4,290	4,255	3,860
Million barrels per day	11.3	11.0	11.7	11.7	10.5
Trillion Btu	22,569	2,130	23,770	23,600	21,220
Supplemental supplies:[2]					
Million barrels	[3] 1,406	[3] 2,340	[3] 3,325	4,885	9,125
Million barrels per day	3.9	6.4	9.1	13.3	25.0
Trillion Btu	7,923	12,960	18,420	27,100	50,160
Percent of total supply	26.0	36.9	43.7	53.4	70.3

[1] Includes crude oil and natural gas liquids.

[2] May be from imports, shale oil, coal liquefaction, etc. See text for discussion.

[3] All imports.

ventional domestic sources, both onshore and offshore, to the extent that it may be made available through increased discoveries of new reserves. The proportion which each of these sources will contribute is dependent primarily upon governmental policies, environmental restraints and economic conditions during this period. Beyond 1980, supplemental supplies will come not only from these sources but also from such non-conventional sources as shale oil, tar sands and coal liquefaction. Development of new technologies will also be a contributing factor to the extent these new energy forms are made available.

The CHAIRMAN. Have you any idea how much of the crude oil will come from Venezuela?

Mr. HORTON. I am sorry that we do not have that one figure. We can provide it for the record.

The CHAIRMAN. And, to what destinations in the United States would that crude oil coming from Venezuela go, how much from Canada, and where would the Canadian oil come into the United States and then your estimation of how much would come from Alaska.

I think if you could supply that for the record, it would be helpful.

Mr. HORTON. Be happy to do that.

[The information referred to follows:]

DESTINATION OF PETROEUM IMPORTED INTO THE UNITED STATES

Nearly all crude oil imports from Canada enter the U.S. by pipeline from Canada's oil producing areas in the Western Provinces. The probable destinations of crude oil from Venezuela or other sources of waterborne imports is dependent on whether sites can be found for the construction of refineries on the East Coast of the United States. If not, imports of crude oil will be destined for expanded refinery capacity on the Gulf Coast and there will be an additional transportation cost to move the petroleum products from the Gulf Coast refineries to the East Coast market. Projections of imports into the East Coast and the Gulf Coast ports under five different cases were developed by the Office of Oil and Gas, Department of the Interior. These projections show Canadian imports by pipeline, Latin American imports in small tankers, and crude oil imports from the Middle East, Africa, and Southeast Asia in VLCC's (very large crude carriers) or in other words in supertankers.

PROJECTIONS OF SUPERPORT REQUIREMENTS

The projections of petroleum requirements and patterns of supply shown herein were developed to show possible opportunities for port facilities to accommodate very large crude carriers, in selected years and under some specific assumptions regarding domestic producing rates for oil and gas, consequent demand for oil and for imported oil, and the construction of refinery capacity on the East and Gulf Coasts of the United States.

In each case, and for each year, tables were developed on the basis of a single-point oil demand forecast. In each instance the demand level selected falls approximately mid-range of available forecasts and includes petroleum feedstocks for the production of synthetic gas. Each table is footnoted to indicate the full reasonable range of demand anticipations. Generally, variations in demand levels would necessitate comparable changes in projected petroleum imports.

A single case is presented for 1975 on the assumption that lead times are such that new stimulants to production and new refinery construction programs will have little effect on supply patterns by that date.

While we believe that the analysis for the year 2000 is reasonable, by that year oil import levels will be significantly affected by oil reserves not yet discovered, by technology not yet demonstrated and by life styles and energy consumption patterns not yet developed. Moreover, we suggest that if domestic production and alternative energy forms are to be developed in the long term, the greatest need for superport facilities may occur in the late 1970's and the 1980's. Such facilities should be expected to play out in that time period.

Cases IV and V are based on an optimistic projection of domestic production of natural gas and crude oil which probably can be realized only through optimal Federal leasing policies, increased prices and fortuitous finding rates. As much of the incremental volume of oil production reflected in these cases will be from fuels yet to be discovered, it is most difficult to project likely logistical patterns. We have, therefore, attempted to identify only projected waterborne petroleum receipts on the East and Gulf Coasts by size of tanker rather than by point of origin. In each case, volumes anticipated to be delivered by large tankers are sufficient to warrant further investigation of superport potentials.

SUMMARY—EAST COAST SUPERPORT REQUIREMENTS

[Thousands of barrels per day]

	1975	1980	1985	2000
Case I	765	1,135	1,572	2,500
Case II	765	3,505	5,106	6,600
Case III	765	1,135	1,572	2,500
Case IV	765	2,000	1,200	3,200
Case V	765	1,000	600	800

A supplemental table summarizes probable petroleum movements from the Gulf Coast to East Coast for Cases I through III. While an effort has been made to assign volumes to water and pipeline transport, the actual form of such movements in the future will depend on evaluations of specific transportation alternatives. Somewhat greater reliance can be placed on the total movement estimates.

It may be noted that in Cases I and II, through 1985, rising imports more than offset the growth in District I oil demand so that movements from the Gulf Coast rise only slightly to 1975 and then begin to fall significantly below their 1971 level. Under these conditions pipeline capacity probably would not rise to the level indicated for 1971 unless investors anticipated refinery patterns to develop as assumed in Case III.

Case III would require a major expansion in Gulf to East Coast oil movements and in the pipeline or port facilities to accommodate them. In this context it becomes apparent that the port investment required in Case I (largely for product imports) or Case II (largely for crude oil carrying VLCC's) are at least in large measure alternatives to increased investment in inter-coastal facilities.

Projections of Superport Requirements

DEFINITIONS OF CASES

Case I

a. No stimulation of U.S. oil and gas production.

b. Limited additions to capacity of present East Coast refineries but no new refineries in that area.

c. Crude oil and petroleum product imports in volumes needed to meet U.S. energy needs.

d. Greater dependence on offshore refiners for products.

Case II

a. No stimulation of U.S. oil and gas production.

b. Expansion of East Coast refinery capacity to 50% of the area's product requirements. (Approximates pre-oil import control position.)

c. Crude oil and petroleum product imports in volumes needed to meet U.S. energy needs.

Case III

a. No stimulation of U.S. oil and gas production.

b. Limited additions to capacity of present East Coast refineries but no new refineries in that area.

c. Crude oil and petroleum product imports in volumes needed to meet U.S. energy needs.

d. Refinery construction on the Gulf Coast to supply East Coast market.

Case IV

a. Maximum stimulation of U.S. oil and gas production.

b. Expansion of East Coast refinery to accommodate crude oil receipts.

c. Crude oil and petroleum product imports in volumes needed to meet U.S. energy needs.

d. Districts II-IV crude oil production will be refined in those districts, with product output in excess of local needs being shipped principally to District I.

Case V

a. Maximum stimulation of U.S. oil and gas production

b. Limited additions to capacity of present East Coast refineries but no new refineries in that area.

c. Crude oil and petroleum product imports in volumes needed to meet U.S. needs.

d. Refinery construction on the Gulf Coast to supply East Coast market.

SUMMARY—EAST COAST SUPERPORT REQUIREMENTS

[Millions of short tons per year]

	1975	1980	1985	2000
Case I	41	61	85	134
Case II	41	188	275	354
Case III	41	61	85	134
Case IV	41	107	64	172
Case V	41	54	32	43

SUMMARY—GULF COAST SUPERPORT REQUIREMENTS

[Thousands of barrels per day]

	1975	1980	1985	2000
Case I	1,573	1,805	3,248	10,900
Case II	1,573	1,805	3,248	10,600
Case III	1,573	4,175	6,782	14,700
Case IV	1,573	400	0	0
Case V	1,573	1,400	600	2,400

SUMMARY—GULF COAST SUPERPORT REQUIREMENTS

[Millions of short tons per year]

	1975	1980	1985	2000
Case I	84	97	174	585
Case II	84	97	174	570
Case III	84	224	364	789
Case IV	84	21	0	0
Case V	84	75	32	129

CASE I, II, AND III—1975.—INCREASED OIL IMPORTS TO MEET ENERGY NEEDS

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	18,400	7,535	8,270	2,595
Total U.S. production:				
Crude	8,960	50	7,740	1,170
NGL	1,840	10	1,810	20
Total	10,800	60	9,550	1,190
Total oil imports	7,600	3,905	2,473	1,222
From Canada	1,300	175	715	410
Waterborne	6,300	3,730	1,758	812
Source of waterborne imports:				
Western Hemisphere	[1] 3,200	[1] 2,865	185	150
Europe (product)	200	200		
Total in small tankers	[1] 3,400	[1] 3,065	185	150
Middle East (crude)	2,325	365	1,473	487
Southeast Asia (crude)	175			175
Africa (crude)	400	400		
Total in VLCC's	2,900	765	1,473	662
Crude runs	13,560	1,390	9,928	2,242
Required crude capacity	15,070	1,540	1,030	2,500

[1] Includes 400 barrels per day of crude oil, demand ranges—low 17,200; high 19,000.

CASE I–1980.—INCREASED OIL IMPORTS AND NO NEW REFINERIES ON EAST COAST

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	22,790	9,240	10,325	3,225
Total U.S production:				
Crude	10,460	45	7,885	2,530
NGL	1,540	10	1,490	40
Total	12,000	55	9,375	2,570
Total oil imports	10,790	6,786	3,467	537
From Canada	1,800	150	1,393	257
Waterborne	8,990	6,636	2,074	280
Source of Waterborne imports:				
Western Hemisphere	[1] 5,650	[1] 5,201	269	180
Europe (product)	300	300		
Total in small tankers	[1] 5,950	[1] 5,501	269	180
Middle East (crude)	2,240	435	1,805	
Southeast Asia (crude)	100			100
Africa (crude)	700	700		
Total in VLCC's	3,040	1,135	1,805	100
Crude runs	15,600	1,630	11,083	2,887
Required crude capacity	16,830	1,810	12,320	3,210

[1] Includes 300 barrels per day of crude oil, demand ranges—low 21,640; high 23,940.

CASE II—1980.—INCREASED OIL IMPORTS WITH REFINERY GROWTH ON EAST COAST

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	22,790	9,240	10,325	3,225
Total U.S. production:				
Crude	10,460	45	7,885	2,530
NGL	1,540	10	1,490	40
Total	12,000	55	9,375	2,570
Total oil imports	10,790	6,786	3,467	537
From Canada	1,800	150	1,393	257
Waterborne	8,990	6,636	2,074	280
Source waterborne imports:				
Western Hemisphere	[1] 3,280	[1] 2,831	269	180
Europe (product)	300	300		
Total in small tankers	[1] 3,580	[1] 3,131	269	180
Middle East (crude)	4,610	2,805	1,805	
Southeast Asia (crude)	100			100
Africa (crude)	700	700		
Total in VLCC's	5,410	3,505	1,805	100
Crude runs	17,970	4,000	11,083	2,887
Required crude capacity	19,980	4,450	12,320	3,210

[1] Includes 300 barrels per day of crude oil demand ranges—low 21,640; high 23,940.

CASE III—1980.—INCREASED CRUDE OIL IMPORTS WITH NO NEW REFINERIES ON EAST COAST

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	22,790	9,240	10,325	3,225
Total U.S. production:				
Crude	10,460	45	7,885	2,530
NGL	1,540	10	1,490	40
Total	12,000	55	9,375	2,570
Total oil imports	10,790	4,416	5,837	537
From Canada	1,800	150	1,393	257
Waterborne	8,990	4,266	4,444	280
Source of waterborne imports:				
Western Hemisphere	[1] 3,280	[1] 2,831	[2] 69	180
Europe (product)	300	300		
Total in small tankers	[1] 3,580	[1] 3,131	269	180
Middle East (crude)	4,610	435	4,175	
Southeast Asia (crude)	100			100
Africa (crude)	700	700		
Total in VLCC's	5,410	1,135	4,175	100
Crude runs	17,970	1,630	13,453	2,887
Required crude capacity	19,980	1,810	14,960	3,210

[1] Includes 300 barrels per day of crude oil demand ranges—low 21,640; high 23,940

CASE II—1985.—INCREASED CRUDE OIL IMPORTS WITH REFINERY GROWTH ON EAST COAST
[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	26,885	10,812	12,121	3,952
Total U.S. production:				
Crude	10,396	40	7,446	2,910
NGL	1,329	10	1,279	40
Total	11,729	50	8,725	2,950
Total oil imports	15,160	9,005	5,203	952
From Canada	2,200	150	1,498	552
Waterborne	12,960	8,855	3,705	400
Source of waterborne imports:				
Western Hemisphere	[1] 4,106	[1] 3,349	457	300
Europe (product)	400	400		
Total in small tankers	[1] 4,506	[1] 3,749	457	300
Middle East (crude)	7,354	4,106	3,248	
Southeast Asia (crude)	100			100
Africa (crude)	1,000	1,000		
Total in VLCC's	8,454	5,106	3,248	100
Crude runs	21,150	5,396	12,192	3,562
Required crude capacity	23,560	6,000	13,600	3,960

[1] Includes 100 million barrels per day crude demand ranges—low 25,525; high 28,245.

CASE I—1985.—INCREASED OIL IMPORTS AND NO NEW REFINERIES ON EAST COAST
[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	26,885	10,812	12,121	3,952
Total U.S. production:				
Crude	10,396	40	7,446	2,910
NGL	1,329	10	1,279	40
Total	11,725	50	8,725	2,950
Total oil imports	15,160	9,005	5,203	952
From Canada	2,200	150	1,498	552
Waterborne	12,960	8,855	3,705	400
Source of waterborne imports:				
Western Hemisphere	[1] 7,640	[1] 6,883	457	300
Europe (product)	400	400		
Total in small tankers	[1] 8,040	[1] 7,283	457	300
Middle East (crude)	3,820	1,072	2,748	
Southeast Asia (crude)	100			100
Africa (crude)	1,000	500	500	
Total in VLCC's	4,920	1,572	3,248	100
Crude runs	17,616	1,862	12,192	3,562
Required crude capacity	19,630	2,070	13,600	3,960

[1] Includes 100 million barrels per day crude demand ranges—low 25,525; high 28,245.

CASE III—1985.—INCREASED CRUDE OIL IMPORTS WITH NO NEW REFINERIES ON EAST COAST

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	26,885	10,812	12,121	3,952
Total U.S. production:				
Crude	10,396	40	7,446	2,910
NGL	1,329	10	1,279	40
Total	11,725	50	8,725	2,950
Total oil imports	15,160	5,471	8,737	952
From Canada	2,200	150	1,498	552
Waterborne	12,960	5,321	7,239	400
Source of waterborne imports:				
Western Hemisphere	[1] 4,106	[1] 3,349	457	300
Europe (product)	400	400		
Total in small tankers	[1] 4,506	[1] 3,749	457	300
Middle East (crude)	7,354	1,072	6,282	
Southeast Asia (crude)	100			100
Africa (crude)	1,000	500	500	
Total in VLCC's	8,454	1,572	6,782	100
Crude runs	21,150	1,862	15,726	3,562
Required crude capacity	23,560	2,070	17,490	4,000

[1] Includes 100 million barrels per day crude demand ranges—low 25,525; high 28,245.

CASE II—2000.—INCREASED OIL IMPORTS WITH REFINERY GROWTH ON EAST COAST

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	[1] 35,000	13,300	16,200	5,500
Total U.S. production:				
Crude	11,460		8,500	2,960
NGL	1,540		1,500	40
Total	13,000		10,000	3,000
Total oil imports	22,000	6,600	12,900	2,500
From Canada	2,500		2,300	200
Waterborne	19,500	6,600	10,600	2,300
Source—Waterborne imports:				
Western Hemisphere				
Total in small tankers				
Middle East/Africa (crude)	17,700	6,600	10,600	500
Southeast Asia (crude)	1,800			1,800
Total in VLCC's	19,500	6,600	10,600	2,300
Crude runs	33,460	6,600	21,400	5,460
Required crude capacity	37,150	7,300	23,780	6,070

[1] Extreme ranges of probable demand are from 25,000,000 to 39,000,000 barrels per day.

CASE III—2000.—INCREASED CRUDE OIL IMPORTS WITH NO NEW REFINERIES ON EAST COAST

[Thousands of barrels daily]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	[1] 35,000	13,300	16,200	5,500
Total U.S. production:				
Crude	11,460		8,500	2,960
NGL	1,540		1,500	40
Total	13,000		10,000	3,000
Total oil imports	22,000	2,500	17,000	2,500
From Canada	2,500		2,300	200
Waterborne	19,500	2,500	14,700	2,300
Source of waterborne imports:				
Western Hemisphere				
Total in small tankers				
Middle East/Africa (crude)	17,700	2,500	14,700	500
Southeast Asia (crude)	1,800			1,800
Total in VLCC's	19,500	2,500	14,700	2,300
Crude runs	33,460	2,500	25,500	5,460
Required crude capacity	37,150	2,780	28,300	6,070

[1] Extreme ranges of probable demand are from 25,000,000 to 39,000,000 barrels per day.

CASE I—2000.—INCREASED OIL IMPORTS AND NO NEW REFINERIES ON EAST COAST

[Thousands of barrels per day]

	Total United States	District I	Districts II–IV	District V
Total U.S. demand	[1] 35,000	13,300	16,200	5,500
Total U.S. production:				
Crude	11,460		8,500	2,960
NGL	1,540		1,500	40
Total	13,000		10,000	3,000
Total oil imports	22,000	6,300	13,200	2,500
From Canada	2,500		2,300	200
Waterborne	19,500	6,300	10,900	2,300
Source of waterborne imports:				
Western Hemisphere	3,800	3,800		
Total in small tankers	3,800	3,800		
Middle East/Africa (crude)	13,900	2,500	10,900	500
Southeast Asia (crude)	1,800			1,800
Total in VLCC's	15,700	2,500	10,900	2,300
Crude runs	29,660	2,500	21,700	5,460
Required crude capacity	32,950	2,780	24,100	6,070

[1] Extreme ranges of probable demand are from 25,000,000 to 39,000,000 barrels per day.

MOVEMENTS GULF COAST TO EAST COAST

[Million barrels per day]

	1971 actual	1975 I-II-III	1980 I	1980 II	1980 III	1985 I	1985 II	1985 III	2000 I	2000 II	2000 III
Water	[1] 1,915	1,300	1,200	1,220	2,269	500	500	2,291	-------	-------	-------
Pipeline	1,404	2,270	1,199	1,199	2,500	1,257	1,257	3,000	-------	-------	-------
Total	3,319	3,570	2,399	2,399	4,769	1,757	1,757	5,291	7,000	6,700	10,800

[1] Includes crude oil 565; river barge movements, 65.

CASES 4 AND 5 U.S. SUPPLY/DEMAND

[Million barrels daily]

	1980	1985	2000
Total demand	20.8	23.2	24.1
Domestic production	10.2	11.2	5.9
NGL	1.9	2.0	1.5
North Slope	2.0	3.0	2.0
Synthetics	0.1	0.5	6.0
Total	14.2	16.7	15.4
Imports required	6.6	6.5	8.7
Products	3.0	2.9	2.9
Crude	3.6	3.6	5.8
Canada	1.8	3.0	2.4
Western Hemisphere	0.2	0.2	0.2
Eastern Hemisphere	1.6	0.4	3.2
Additional crude for LNG manufacturing	0.8	0.8	-------
Total Eastern Hemisphere imports	2.4	1.2	3.2

WATERBORNE CRUDE RECEIPTS

[Millions of barrels per day]

	1975	1980	1985	2000
Case IV:				
District I:				
Small	0.4	0.4	1.0	0.2
Large	.8	2.0	1.2	3.2
Total	1.2	2.4	2.2	3.4
District III:				
Small	-------	.5	-------	-------
Large	1.6	.4	-------	-------
Total	1.6	.9	0	0
Case V:				
District I:				
Small	.4	.6	.4	.2
Large	.8	1.0	.6	.8
Total	1.2	1.6	1.0	1.0
District III:				
Small	-------	.3	.6	-------
Large	1.6	1.4	.6	2.4
Total	1.6	1.7	1.2	2.4

Mr. Carter. Madam Chairman, let me give you a brief and general response which we can make more precise in our submission, but the projections for imports from the Western Hemisphere has become more difficult to make with certainty in the last few years.

The investment in production in Venezuela has not been at the same level of increase as it has in the past, and I do not think we now project an increasing level of supply from that area as we were able to in recently past years.

Moreover, imports from Canada which are now running very substantial, I believe in the neighborhood of about 800,000 barrels a day of crude from Canadian sources are subject to possible change in Canadian policy.

The Canadian Government has recently imposed controls on the export of crude oil to the United States. They are looking at their own oil supply picture, so it is not possible to predict with a great deal of confidence for 1980 and 1985 from Canadian sources.

We hope that by 1985 at least to be receiving 2 million barrels of oil a day from Alaska, into the lower 48 States, the trans-Alaska pipeline.

What all of this represents though, is an increasing volume of imports and an increasing percentage of those imports coming from the Middle East, and leading to the necessity for economic reasons of importing that oil in the very large crude carrying vessels.

The Chairman. One other thing as to oil coming from Canada: Where is the oil produced, in what section of Canada? Into what section of the United States is it imported? The same information on Venezuelan oil. As to Alaska, we know.

I just have two other very brief questions.

How far from the shores would you believe that these ports should be built? You mentioned something about the 3-mile limit. They would have to be farther out than that, would they not?

Mr. Horton. I think, Madam Chairman, it would vary depending upon the slope of the Outer Continental Shelf itself.

If you were looking to 100 feet or more for the tankers, it would depend upon how rapidly the slope dropped off.

The Chairman. I do not know how far the Continental Shelf runs.

Mr. Horton. In our judgment, it would be at least 20 miles. I think it would be generally out of sight from anyone on the shoreline.

The Chairman. The main reason that I asked you that question is: What would be the danger to these offshore ports from the weather, the wind, and the waves out in the ocean?

Mr. Horton. The rougher condition of the seas is a very serious consideration, but nonetheless, that technology is sufficiently advanced to permit safe operations in heavy seas.

The Chairman. Thank you, very much.

Mr. Downing?

Mr. Downing. Thank you, Madam Chairman.

Mr. Secretary, you made a very fine statement. In your statement, you ticked off several reasons why this legislation should be in the Department of the Interior.

Can you not think of any reasons why it should be in the Department of Commerce?

Mr. HORTON. Yes, sir; the administration considered those reasons and on balance, determined that there were more reasons for putting it in Interior if the legislation passes, than in Commerce.

Mr. DOWNING. Did I understand you to say that the coastal zone management was vested in the Department of the Interior?

Mr. HORTON. No, sir; I said the responsibilities for first pursuing and then implementing the national land use policy legislation.

Mr. DOWNING. But the two things are now separate and coastal zone management is under the Department of Commerce.

Mr. HORTON. That is correct.

Mr. DOWNING. Would that not be a factor which would favor it to be included in the Department of Commerce rather than Interior?

Mr. HORTON. Mr. Downing, it is the policy of the Department that the responsibilities for land use planning should belong properly with the States, and the proper role in any coastal zone land use planning, should belong with them and, of course, the coastal areas are only half of the problem we are looking at.

The other half is the facility itself, which would be on the Outer Continental Shelf, which is under the jurisdiction of Interior.

Mr. DOWNING. Well, the administration has set up NOAA as a lead agency to handle things pertaining to the oceans and the atmosphere.

It would seem to me since you are going to put these deepwater ports in international waters, it should come under NOAA.

Mr. HORTON. Well, that was a consideration which obviously the administration gave. I mean, they were weighing on balance the merits and demerits between the Department of Commerce and the Department of Interior. But as you well appreciate, we have formal responsibilities over the land portion of the Outer Continental Shelf as well as our responsibilities for energy development.

Mr. DOWNING. Have you made any decision as to the number of these deepwater ports that will be necessary?

Mr. HORTON. That, of course, would be dependent upon the year we are looking at.

I will ask Mr. Carter whether we have specific figures for the year 1985 or the year 2000.

Mr. CARTER. No, sir, we have not. Under our bill and our approach to the problem, the basic decision on the need for these facilities will be made by the private sector and the Department's role would be to assure that whatever facilities are sought would be consistent with the requirements of the act.

We do not envision trying to specify a certain number.

Now, right at the present moment, we do know that there are two projects which have a substantial backing and a degree of planning behind them now, and would probably seek licenses very shortly after any legislation was in effect.

Whether new applications would come in for other areas within a relatively short period of time, we just do not know.

Mr. DOWNING. The license would be sought by the private sector, and then approved if it meets the guidelines of the legislation, is that correct?

Mr. CARTER. Yes, sir.

Mr. Downing. Do you have any estimate as to the costs of these ports?

Mr. Carter. I believe that I am right in saying that the offshore portion is in the neighborhood of $300 million but I do not know what the onshore portion would be, and that would be something that your industry representative would be able to give you much better figures on than we could.

Mr. Downing. Would the Government subsidize any part of the cost of this port?

Mr. Carter. No, sir.

Mr. Downing. One final question. From an economic viewpoint, what effect on the relative merits of the Alaskan as contrasted to the Canadian pipeline would result from an offshore terminal facility in the gulf with arrangements for increased throughput to the upper Midwest area, including the Great Lakes area?

Mr. Carter. From an economic point of view?

Mr. Downing. Yes.

Mr. Carter. I would have to look at some specific figures, but if you consider that the price of the crude in the gulf, any port of entry is going to be the world price, plus if it is foreign crude, with fees under the mandatory oil import program and then transportation costs to the Midwest.

I believe that so far as the price is concerned in the Midwest, I am accurate in saying that the price will remain the same whether you are supplying the Midwest with oil from the gulf or you are supplying the Midwest with oil from Alaska via trans-Canadian pipeline, but one thing that I think is important to notice here is that the problems of preparing a delivery system of oil to the Midwest will have to be addressed relatively quickly if those supplies are going to come from the gulf through pipelines and the decisions have to be made in the relatively near future and that holding in abeyance the question whether the Midwest is going to be supplied from that source or by Alaskan oil can only exacerbate the planning difficulties that the industry runs into and that we run into in figuring out how those demands are going to be met.

Mr. Downing. Well, if the oil crunch is as bad as they say it is, we could use it from both sources, could we not?

Mr. Carter. It might be possible that both sources would be necessary, but if you think of the investment decisions that are necessary to build the delivery systems from both sources, it is important for planning purposes to have a pretty good fix on what volume you are going to have to supply from one source or the other or you wind up with redundant delivery sources and economic inefficiencies.

Mr. Downing. Thank you, Mr. Secretary.

Thank you, Madam Chairman.

The Chairman. Mr. Grover.

Mr. Grover. Mr. Horton, you require in this bill an environmental impact statement in connection with each license application.

We think and had been anticipating that you would be promulgating a draft environmental impact statement to accompany the filing of this bill with the committee.

Is that due in the near future?

I understand it is overdue.

Mr. Horton. It is due. Your understanding is partially correct. A programatic or comprehensive environmental impact statement for the general proposal is now in preparation.

It is in draft form and it is my understanding it is not far from completion and in the posture it can be distributed for comment.

Mr. Grover. Not far away? What are we talking about in a time frame reference?

Mr. Horton. I am informed Mr. Grover, that we can expect it within 2 weeks.

Mr. Grover. Would it be possible to have that filed with the committee?

Mr. Horton. We certainly will do it at the very earliest time.

Mr. Grover. You refer in your statement to your expertise in the supervision of construction and operation of offshore facilities. What is your expertise? What are you referring to as "in your expertise"? Is that just engineering expertise, environmental expertise, or what?

Mr. Horton. Let me take, sir, your questions in order.

The expertise derives from the combined service of geological surveys and land management which have responsibility for administration of the Outer Continental Shelf Act. They are concerned with environmental matters, with safety, with engineering capabilities, advanced technology, and whatnot, but the expertise primarily derives from the experience that the Department has had in these two agencies in administering the act.

Mr. Grover. Even though we have a different geology than the west coast, people in the Northeast Coastal States are quite concerned over the possibility of massive blowouts, such as they had in Santa Barbara. Does your expertise indicate we are approaching fail-safe in offshore drilling?

Mr. Horton. I am not sure we can say we have attained a perfect condition of fail-safe, but it is our judgment that we are approaching that point with every year we study and increase the safety and the engineering and the environmental stipulations for OCS drilling.

Mr. Grover. What is the leadtime? What is the time element in the construction of a deepwater port?

Mr. Horton. Since one has not been built at least off the U.S. shores, I am not so sure we can determine that with any accuracy. But I would guess in the area of 4 or 5 years.

Mr. Carter. I would not think it would be any longer. I believe I recall an industry projection of approximately 2 years after the date we are in a position to grant a license, before the facility could be in operation.

Mr. Grover. Then one last question. Your legislation refers to the principle purpose of transshipment of commodities. The main commodities we are considering now are those involved with energy. Congress has come out with a proposal which would accommodate a port facility, including an airport, not restricted to energy-producing products. Do you feel that this flexibility or the prospect of flexibility in your legislation to accommodate a broader projection of activity in your deepwater ports is feasible?

Mr. Horton. Mr. Grover, I think we have focused primarily, as you point out, on the transshipment of energy fuels. Our legislation does not address a greater number of commodities. It is my understanding, if we understand your question correctly, that the administration did not support at this time a facility which would allow for greater diversification of commodities because of their expense.

Mr. GROVER. A reading of the bill would indicate that there is a degree of flexibility.

One final question. Would the bill permit the association of drilling rigs adjacent to or as a part of your deepwater ports?

Mr. HORTON. It could provide that. I think we have not envisioned that, because normally you would not have geological structure, or the structures in a particular area that would coincide with the optimum location of a deepwater port. It would be coincidental, and I think it perhaps could add to navigational hazards and difficulties, so I think in a general sense we would not support that.

Mr. GROVER. Thank you.

The CHAIRMAN. Mr. Murphy?

Mr. MURPHY. Thank you, Madam Chairman.

Mr. Horton, Mr. Grover's questions bring out a point. Are you talking about offshore terminals? Are you talking about rather expensive public works that go to the point of actually building up from the sea bottom a port area, or are you talking about a floating buoy with a flexible connection to a pipeline that has come out from the shore?

Mr. HORTON. We are not talking about any public works project. This would be financed by private industry.

Mr. MURPHY. I asked you whether you are talking about a fixed, built-up installation or a flexible connection to a buoy.

Mr. HORTON. I would think it would combine the merits of both.

Mr. CARTER. I think whatever type facility meets the requirements of the Act is permissible under the Act.

We do not want to preclude any advances in technology being able to be incorporated into future facilities.

It is our understanding that the state of the art now is that there are a couple of alternatives available. One is a single point mooring, or a series of them that are brought together with a platform that may house the pumping facilities and other support facilities for the entire operation. It could be a structure very similar to an offshore drilling platform. There is nothing in the bill other than the requirements that it be environmentally safe, meet navigational safety criteria, et cetera, that dictate the specific technology.

Mr. MURPHY. Now, if one of these platforms was 15 miles or more off the coast, would it be subject to the Federal Water Quality Improvement Act of 1970, and would the ships that moor there be subject to it?

Mr. CARTER. Yes, sir.

Mr. MURPHY. Mr. Horton, in your statement on segregated ballast, do you endorse the Coast Guard's remarks of a 45 percent segregated ballast?

Mr. HORTON. The 45 percent, sir, refers to what?

Mr. MURPHY. Forty-five percent of the carrying capacity.

Mr. HORTON. Of the capacity? I do not think, Mr. Murphy, we are in a position in the Department of Interior to either endorse or not endorse that. Our expertise would not lie in that area.

Mr. Carter. On the specifics, we certainly endorse the concept that Secretary Morton has made very clear in his testimony in conjunction with the trans-Alaska pipeline proposal. But the specifics are certainly something that the Coast Guard knows a great deal more about than we do, and we would not want to second-guess them on it.

Mr. Murphy. Do you endorse the double-bottom requirement of the Coast Guard in that same hearing?

Mr. Horton. Conceptually, sir, the answer to that is yes.

Secretary Morton, as early as 2 years ago, adopted the principle of double bottoms of movement of oil from Alaska to Valdez.

Mr. Murphy. Would you impose unilateral requirements on the United States as opposed to worldwide requirements as to ballast and double bottom construction?

Mr. Carter. We would certainly hope that you can arrive at worldwide standards to control the movement of oil over the oceans.

As you know, there is going to be an increasing volume of oil transport between many countries, and there is a great need under all of these statistics that are available for assuring the maximum possible protection against oil pollution. Whether we face the problem of imposing standards that are more stringent that what the international community agrees to is a problem we will have to face if the international community does not come up to the needs for the future. But we certainly prefer to have uniform standards.

Mr. Murphy. Well, we found from experts that double bottoms and ballast requirements of certain types cause more ecological problems than they solve in navigability of the ships, and add as much as 17 feet to the draft of a ship. Those are areas in which we are working this time.

What about the problem of piping ashore from these offshore terminals? The States and committees of the Congress have voiced their opinion that they will not permit that activity to take place.

I am talking specifically about the House Public Works Committee.

Mr. Horton. One of the leading principles, Mr. Murphy, of our proposed legislation is that the decisions on where to locate these deepwater ports would be taken in full consultation with State Governors and State land-use planning agencies.

It is not the intention of our legislation to override the voices at the State level in terms of land planning, as to where the onshore facilities might be located in conjunction with the offshore facilities.

Mr. Murphy. But what about the public works aspect and the jurisdiction that that committee has over piping to the shoreline?

Mr. Carter. At the risk of not being sure I fully understand your question, let me say that under our bill there is a requirement that all of the existing federal agencies exercise their responsibility with regard to the kind of approvals required for these facilities.

It is incumbent upon the Secretary of Interior to inform them of any proposal and to get their appproval of any license for a facility granted. There is a mechanism through which all of the agencies with responsibility can exercise that responsibility.

Mr. Murphy. I think you should contact Congressman Howard who is chairman of the subcommittee with this responsibility and get his feelings on it, particularly in light of your statement that the port or ports will allow more time to clean up water spills that do occur.

It is an acknowledgement, and I certainly appreciate your frankness that you are not solving the problem of spills, and we have a long way to go to solve this problem of spills.

That is one of the key requirements of offshore loading bulk cargoes. Spills will occur and they do occur and occur almost on a daily basis in areas where these deepwater ports are located.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Snyder?

Mr. SNYDER. Thank you, Madam Chairman.

Continuing along Mr. Murphy's line, I think he has reference to H.R. 2020 which Congressman Howard has introduced, which gives the States the right of veto over any such facility as is anticipated regardless of how far it might be out from their shore.

In this connection, do you have any information or studies that might show where the need for these ports is going to be.

Mr. HORTON. Mr. Snyder, I think there will be substantial discussion of that in our environmental impact statement, the draft statement which we expect to publish and distribute within the next 2 weeks, but certainly the two main areas that would be under close examination would be the east coast and gulf coast.

Mr. SNYDER. As I can determine from our members' sentiment, it seems that in the gulf coast they are rather eager for these and on the east coast there seems to be considerable opposition.

As a matter of fact, I was discussing this just yesterday with an east coast member, and I might say it was not Congressman Howard since his name was brought up, but it was indicated that such a facility off the shore of New Jersey would require 100 miles of pipeline, 70 out and 30 up to the refinery.

Is there any substance to that statement?

Mr. HORTON. I think at this time we do not envision them as being as far offshore, as 70 miles.

We do not have any facts naturally at this time to disprove that, but this obviously will come up when a specific site is proposed, an environmental impact statement would be required and indeed, to answer Mr. Murphy's question further, that by law the originating Federal agency is required to distribute it not only to the public but to other Federal and State agencies.

In addition to what we call the programmatic 102 statement, there would be specific environmental statements required for any specific proposal.

Mr. CARTER. Let me add a couple of points, Congressman Snyder. One is that under the arrangement we envision we could not, nor could industry shove that facility into an area where it was not consistent with and desired by the State's land use planning agency.

Now, the alternative to 100 miles of pipeline to bring in large volumes of crude to refineries to meet that market will be either bringing crude or product in small vessels into the onshore port facilities with the increased risk of collision and grounding or to bring crude to the refinery by pipeline from where the offshore facility might be welcome and there you are dealing with 800 or 900 miles of pipeline, not just 100.

Mr. SNYDER. When you say the State has effective veto by virtue of land use, you are talking about basically zoning laws and things of this nature?

Mr. CARTER. It depends on the State statute, but the State will certainly have control over the location and whether or not the onshore facilities are going to be built. They have authority over the pipeline within the 3 miles of the territorial sea.

Mr. SNYDER. Well, would the offshore facilities be different with the deepwater ports several miles out, as opposed to being associated with close in ports, as they now have?

Mr. CARTER. Probably not, but I just do not know the answer to that.

Mr. SNYDER. So if you have a refinery now present and the State did not have a veto right, I am not advocating that they should have, are you suggesting to put the deepwater port out there, that the same refinery is going to use it?

Mr. CARTER. I would expect the State to have that view because the alternative of bringing in increasing volumes of crude in small ships compared to the risks that are involved in an offshore facility, would certainly point in that direction.

Mr. SNYDER. If, in fact, the east coast was successful in prohibiting deepwater ports off the shores and they were required to go to the gulf, what would be the capacity of the industry to get the product to the east coast to satisfy their needs from the gulf or wherever it might be?

Mr. HORTON. I think, Congressman, the first alternative would be simply a greater increase in the density of, let us say, 30,000 DWT tankers. If you preclude through a State veto authority, a deepwater port from coming into existence, then the increased demand for petroleum would be supplied through small tankers.

Mr. SNYDER. Would these tankers bring it from abroad or would they bring it from a distribution point, like the Bahama Islands, or some such as that?

Mr. CARTER. It obviously could be either and those are decisions that the industry is going to have to make whether they are going to pipeline crude or product from the gulf, or whether they are going to transship crude or product from the gulf, or from the Bahamas, or from Puerto Rico, or Nova Scotia.

Those are the kinds of decisions that the industry is going to have to make in the relatively near future in order to plan ahead for supplying the demand in the east coast market.

Mr. SNYDER. In any event, it would be a substantial increase in cost for the consumer.

Mr. HORTON. Yes, sir.

Mr. SNYDER. Any question about that?

Mr. HORTON. No, sir.

Mr. SNYDER. We are talking about deepwater ports for the purpose of bringing in oil.

What is the status of such facilities at the producing end of the line?

Can they handle these gigantic tankers and fill them up?

Mr. Carter. There are about, I understand, over 100 of what you would refer to as these deepwater port facilities now around the world. Some of them are in fairly close to shore. Some of them are out quite a ways. Some of them are used for loading purposes. Some of them are used for off loading purposes. The technology is there, as I understand the problem, to use these kind of facilities at either end of the loading for off loading processes.

Mr. Snyder. You know, and I do not mean this in a derogatory sense and I hope you do not misunderstand me but if there are 100 of these around the world, I am surprised you cannot give a more definitive answer to Congressman Murphy's question about what they actually involve. I am wondering if this might not be some reflection of the knowledge of the Department of Interior as opposed to some other Government department in the area of deepwater ports, and sea navigation and construction of vessels, and many other things that concern this committee and the Congress. I wonder who ought to have jurisdiction in the matter.

I do not say this in any sense as being derogatory of the witnesses, certainly, because I am sure that you have maximum amount of experience and expertise in those matters that you handle daily within your department, but Interior does not normally handle these matters, and I wonder if that might not be a reflection on the response we are getting.

Mr. Horton. Mr. Congressman, if I could respond to that, we appreciate your comment. We are in no sense appearing here today as experts on the technology or engineering of the ports.

Mr. Snyder. Do we not need that?

Mr. Horton. I will point out an analogous situation that is in the construction of OCS platforms for OCS drilling and development.

We do not design the derrick. We require stringent safety regulations and environmental stipulations.

We are not trying to create a Government bureaucracy that would create an agency to do this. We are concerned with the environment and consumer economics, but not concerned apart from environmental safety interest as to how private interest would design and construct these facilities.

Mr. Snyder. If you are concerned with environment, then you have to be concerned with what kind of a structure is stuck out there in the water if, in fact, it is a structure. I am not faulting you but I share some of the concern of other members as to who ought to look after this thing—who ought to have jurisdiction.

My preliminary judgment is that I am in favor of deepwater ports and my preliminary judgment is that they ought to be wherever the need requires. I think the energy crisis is a national problem, and you should put them on the east coast or the Gulf or wherever they need them.

Probably, as you infer, the technology is available and the expertise is in some oil company. I suspect it is all there and we need to move forward with the issue. I also think perhaps there might be some error of judgment in the administration's bill as to what department ought to handle deepwater ports and that is why I bring this point up.

Again, if I have sounded critical, I do not mean it to be that way. It is a matter of wording.

Mr. CARTER. Let me add, Congressman Snyder, in answering Congressman Murphy, we were primarily interested in getting across the point that we were not going to get into the business of prescribing as an initial proposition the type of facility that was going to be constructed, and as Secretary Horton has pointed out and as we lived through in reviewing designs of the trans-Alaska pipeline, we have to respond to proposals on highly technical problems in a critical way.

I would, for the committee's purpose, look into a broad range of questioning of the design of these facilities, some of these issues involved, and I would like to leave with the committee a very excellent book that a couple of members of the Coast Guard have prepared on the whole question of the design and operation and some of the considerations affecting these facilities and assure you that the Administration has looked at the matter with all of the agencies that are participating in this question.

Mr. SNYDER. Well, I am sure my time is up and the chairman has been more than courteous, and I will not prolong it, but I think some agency of Government better be looking at what kind of facility goes out there. You say you are not going to concern yourselves with it, but I think Government better concern itself with it. When one of these spills occur they come up here looking for money to help clean it up, we have to be concerned with what has transpired out there, be it from a tanker or whatever.

We have passed legislation under which I believe they can be penalized up to $14 million and they have to carry some insurance.

That was the bill that came out of the Public Works Committee last year. But the taxpayer gets hung with picking up much of the spill costs. Congress has permitted these tabs to be up. We ought to be having something to say about what kind of structure is being built out there.

I think we need them and ought to have them, but the question is whether the Government departments have the expertise. Interior hasn't demonstrated it here today.

The CHAIRMAN. I certainly agree with you. That is why we started this series of hearings because we think the way of transporting the oil has a great deal to do with this committee as well as the ports themselves. In speaking of the tankers to be unloaded at these offshore ports, I do not know if you have been speaking of just the tankers under the U.S. flag, or foreign tankers, and because of international law I just wonder what kinds of control we would have over these tankers if they are foreign, and this is something I think can lead you to thinking. I do not know whether you were speaking of U.S. flag or foreign tankers.

Mr. CARTER. Under the bill, the 1972 Port and Waterways Act is extended in its application to these facilities and under our bill any tanker that uses the facility will consent to the application of whatever standards we impose on tankers in our ports and under international law we have the authority to establish whatever requirements we desire on tankers using U.S. ports.

The CHAIRMAN. And we have a way of implementing that so that if they will not comply they cannot unload.

Mr. CARTER. They cannot off load.

Mr. HORTON. The section Mr. Carter refers to is section 111 of our proposed legislation, if counsel would like to take note to check.

The CHAIRMAN. Mr. Metcalfe?

Mr. METCALF. No questions.

The CHAIRMAN. Mr. Breaux?

Mr. BREAUX. Thank you, Madam Chairman.

Thank you, Mr. Horton, for your statement.

Congressman Treen and I both represent the coastal area of Louisiana which is one of the States interested in obtaining a deepwater port off our coast.

What role, if any, other than from a consultation standpoint, do the States have in the licensing of deepwater ports?

Specifically, has the Department given consideration to any possibility that the State itself could apply for a license permit?

Mr. HORTON. With respect to the first part of your question, I would say that we judge the role of the State with respect to deepwater ports to be fundamental rather than peripheral, not only as a matter of law under NEPA, but indeed, as a matter of proceeding, under our legislation, if enacted, and they would be consulted and they would be central to the decision that would be made yes or no, as to whether there would be a deepwater facility.

I do not believe our legislation addresses the possibility of the State requirement.

Mr. CARTER. Under the bill a State or a subdivision of a State can obtain a license.

Mr. BREAUX I recognize that in the bill.

Now, would you consider allowing a State the right to sublet their license to a private industry?

Mr. CARTER. I do not think there is anything in the bill that would preclude that. I am confident that the regulations implementing the bill would assure some kind of financial responsibility.

One of the requirements of the bill is that the Secretary determine that an applicant is able to perform his license and I am sure we would have a transfer provision in there to assure that not just anyone could become a transferee and not meet the requirements.

Mr. BREAUX. Does the Department envision a single licensing authority and a single agency regulating and controlling deepwater ports, or does it envision other agencies being brought into the process?

Mr. CARTER. It envisions both in the process of determining to grant a license, that all the other agencies be brought in, and, in fact, that all of them perform their existing statutory duty.

It also extends out to these facilities the existing legal structure that would apply in a U.S. port so that, for instance, the Coast Guard and Corps of Engineers, other agencies that have very significant functions in our ports, are also going to have those same functions out to these ports.

Mr. BREAUX. Does the Department's proposal envision the lines running from the onshore facilities to the deepwater port being part of the deepwater port or a part of the onshore facilities?

Did you consider determining who regulates the pipeline between the shore and the deepwater facilities?

Mr. CARTER. Our proposal envisions the pipeline being separate from the deepwater port facility and being licensed under the Secretary's authority as in the Outer Continental Shelf Lands Act, so that a pipeline permit would be issued in the same way as a pipeline, for instance, now from a drilling platform on the OCS.

Mr. BREAUX. I know a lot of people are concerned from the consumer standpoint. Would this affect the price of fuel and oil?

Could you give us the cost of a ton of crude oil being imported on a 50,000 deadweight ton tanker in comparison to what that same ton of crude oil would cost, say, shipped on a 500,000 deadweight tanker?

Mr. CARTER. Yes, sir, I can give you a rough figure on that that I have from this book that I intend to leave with the committee.

This, these two young officers in the Coast Guard prepared after a great deal of study.

I do not find the precise page, but it is roughly $13 a ton now for the 50,000 deadweight ton tanker, and under a 500,000 deadweight ton tanker, the figure would be about $5 a ton so that you have a savings between $13 and $5, whatever kind of percentage that is.

Mr. BREAUX. One other question, Madam Chairman.

I think in the testimony it was pointed out that this really was not the first time a deepwater port has ever been considered, that there are some 100 or more deepwater ports around the world and I am sure the Department is getting into the question of the possibility of spills on these other deepwater ports around the world.

Do you have any information as to the safety?

Mr. CARTER. We have reports from the owners and operators of these facilities that their record is extremely good and all of the information that we have supports that.

We are confident that run under the right set of regulations, the operations of these facilities is going to be very safe.

Mr. BREAUX. Thank you.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Forsythe?

Mr. FORSYTHE. Thank you, Madam Chairman.

Secretary Horton, I think it would be helpful if the record of this hearing included data concerning the prospects for expanding crude production in the continental United States.

What is the potential of the Alaskan oil considering not only the potential of one pipeline, but the total resources available?

In a recent article I read there was substantially more than I believed was possible.

In the area of alternate energy sources, what is the time frame of that potential in relation to the need for imported crude oil?

I would like to get in balance what are these needs and make it a part of this hearing record.

I would appreciate your response to that.

[The following was supplied in response to the above:]

OUTLOOK ON U.S. ENERGY RESOURCES AND NEEDS

The prospects for expanding crude oil production in the continental United States are in our opinion very good given the proper incentives. The U.S.

Geological Survey estimates that our undiscovered oil resources which could be recovered with existing technology are approximately 450 billion barrels or about five times our current proved reserves. The President in his April 18, 1973 Message on Energy stated that our supply of oil and other conventional fuels, if properly managed and conserved could last until our technology frees us from dependence on fossil fuels. Much of this supply is under our outer continental shelf and its development must be accompanied by the strictest environmental safeguards.

We hope to be receiving at least 2 million barrels of oil a day from the North Slope of Alaska by the early 1980's. We estimate the proven reserves to be in excess of 10 billion barrels and we expect that once a delivery system is developed further exploration will reveal substantial additional reserves, sufficient in fact to justify a second pipeline through Canada to the United States Midwest.

The time required to develop the alternative sources of energy to fossil fuels is difficult to predict with confidence. Nuclear energy is presently supplying less than 3% of our total energy needs. By the year 2000 it is expected to supply one quarter. Geothermal steam, solar energy and other non-fossil fuel sources of energy are less far advanced technologically and estimates as to their contribution are uncertain.

Mr. FORSYTHE. One other question, Madam Chairman.

At what point would you contemplate the filing of an environmental impact statement in your licensing process?

Mr. HORTON. I would speak offhand very directly to say that I believe certainly it would be required well in advance of the granting of a license.

Indeed, it would be a necessary part of the prior examination of a proposal. It would be part of the examination of the proposal. In fact, it would be the very heart. It would be the document, the instrument on which a decision would be made.

Mr. FORSYTHE. Almost the first-step consideration?

Mr. HORTON. That would be correct.

Of course, the person, the citizen filing the proposal, filing the request for a license, would have to identify the areas of the specific location so that would be the first step.

The second step would be the preparation of the draft 102 statement.

With respect to your first question, while we could comment here, Congressman Young from Alaska is here and in the interest of time if we could provide answers to those questions, they would be more substantial for the record.

Mr. FORSYTHE. Thank you.

The CHAIRMAN. Mr. Studds?

Mr. STUDDS. Thank you, Madam Chairman.

Mr. Horton, you have spoken again and again this morning about the state of the art. You have assured us of its safety and yet, in response to questions from Mr. Murphy and Mr. Snyder, you really have not had much in the way of specific information.

I understand there are 100 or so of these ports around the world. Where? What are they? Are they floating structures? Can you provide this committee with some precise information as to what does exist at this point in the world, what their safety record has been, how long it has taken to construct them?

Mr. HORTON. A good deal of that information will be contained in the report that Mr. Carter referred to, which will be in your hands, but to the extent that we feel that this information does not fully answer your question, we will amplify that specifically with respect to safety.

I am not sure whether the safety specifics are in there.

[The following information was supplied for the record:]

OIL SPILLS AT MILFORD HAVEN HARBOR

There are no separate published data available on safety record vis a vis oil spills just for monobuoy systems. We are contacting various sources in an attempt to develop such statistics. However, included for your information are some data on oil spills in Milford Haven Harbor. Although this is a harbor and monobuoys are not used these data do indicate although the volume of oil imported since 1963 has more than tripled, the volume of oil spilled has increased only slightly in absolute terms and declined substantial in relation to tons of oil handled.

STATISTIC ON SPILLS AT MILFORD HAVEN, WALES, UNITED KINGDOM

(Milford Haven Spill Statistics)

[Includes all industry operations, including ballasting and bunkering]

	1963	1964	1965	1966	1967 [1]	1968	1969	1970	1971	1963–71 [1]
Total spill—Tons	10	9	36	30	17	14	16	15	[2] 161	308
Total oil tonnage × 10^6	13	18	25	29	28	30	40	41	43	267
Total ships involved	1,236	1,392	1,985	2,378	2,680	2,669	3,226	3,400	3,490	22,456
Percent oil spilled	0.00008	0.00005	0.00014	0.00011	0.00006	0.00005	0.00004	0.00004	0.00037	0.00005
Number of spills per million tons	2.1	1.9	3.3	2.5	1.8	1.7	1.4	1.3	1.1	1.8
Number of spills per 100 ships	2.3	2.4	4.2	3.0	1.9	1.9	1.8	1.6	1.4	2.1
Tons spilled per million tons	0.7	0.5	1.4	1.1	0.6	0.4	0.4	0.4	3.7	1.1
Tons spilled per 100 ships	0.8	0.6	1.8	1.3	0.6	0.5	0.5	0.4	4.6	1.4

[1] Excludes spill from "Chrissi P Goulandris" which entered the Haven holed after damage at sea.

[2] Includes 150 tons from a single incident involving a product carrier which ran aground in the Haven

STATISTIC ON SPILLS AT MILFORD HAVEN, WALES, UNITED KINGDOM

(Milford Haven statistics, number of spills)

	1963	1964	1965	1966	1967	1968	1969	1970	1971
Tankers in passage and at moorings	5	----	----	2	1	2	3	3	2
Tankers:									
Loading	1	8	11	17	10	9	11	15	16
Discharging	5	3	9	13	17	10	22	13	8
Ballasting	1	2	6	3	3	4	----	4	6
Deballasting	2	3	3	----	1	----	4	3	1
Tankers, bunkering	1	3	13	8	4	9	9	8	4
Jetties	8	8	24	15	5	12	6	6	11
Tankers, miscellaneous	5	7	17	14	9	6	3	3	1
Total	28	34	83	72	50	52	58	55	49

Mr. CARTER. Let me add to that, if I may. I think we have done a bad job in answering Mr. Snyder and Mr. Murphy by leaving the impression that we do not know what we are talking about, and that is not true.

We have not gone into the details of how these ports are operated. We spent many, many hours in interagency committees and you will see that reflected in the draft 102 statement that we are preparing.

I can talk about it now. I am not an engineer. I can talk about now the kind of facilities that do exist. They are described in this book. They are described in our 102 statement and we will, in order to assure ourselves under the licensing procedure that these facilities will meet the environmental requirements, assure their technical operation either by our own expertise or in consultation with Coast Guard or the Corps of Engineers, who have the expertise to make sure they are safe.

But this report describes the facilities. Our 102 statement describes the facility very comprehensively.

Mr. STUDDS. I am sure for all those hours you spent in interagency committees, you have the sympathy of all of us.

You mentioned, Mr. Horton, that it was not your intention to override State voices and officials. Do you plan to proceed in this respect, in this manner, with regard to granting permits for exploration and offshore drilling?

Mr. HORTON. I think that is a very good question.

I am not an expert on the procedures of how OCS drilling permits are granted.

Mr. STUDDS. Is there anybody in your Department who is or is it going to happen with or without regard and respect to the feelings of local people?

Mr. HORTON. Well, looking toward the past. The Secretary has indicated that as far as the Atlantic coast is concerned, as far as the Gulf of Alaska is concerned, there will be full consultation with the State Governors, the environmentalists.

Mr. STUDDS. Does that mean you will inform them of what you are going to do or give them a voice?

Mr. HORTON. We will give them a voice.

Mr. STUDDS. Will that voice be given an opportunity to comment?

It is our understanding in New England that the Department of Interior intends to proceed without having the feelings of the people.

Mr. HORTON. That is incorrect.

Mr. STUDDS. Let me switch for a second to a question of police power and questions of international law that may be raised.

You mentioned earlier, I believe, you used the phrase, this will be a "U.S. port." It is, after all, on the high seas, and presumably, most of it would be in international waters. Does this whole thing not raise questions that presumably will be dealt with in the Law of the Sea Conference in terms of the jurisdiction at sea?

What makes this a U.S. port if it is beyond our territorial waters?

Mr. CARTER. That is a difficult question and we have addressed it by the principle that we can regulate the reasonable uses of the high seas by our citizens wherever they occur and because these kinds of facilities have a great utility, because there is an experience of their use around the world, we have concluded that these are reasonable uses of the high seas and we are regulating them as such.

Mr. STUDDS. For our citizens?

Mr. CARTER. For our citizens.

Mr. STUDDS. What about the chairman's question about foreign-flag vessels?

Mr. CARTER. When a foreign citizen uses a facility it is consenting to the regulations that are controlling the use of that facility.

Mr. STUDDS. Are these kinds of questions among those to be addressed by the Law of the Sea Conference?

Mr. CARTER. Yes, sir. They are in the Law of the Sea Conference. The question of deepwater ports has been raised. Whether or not it will be a formal item on the agenda and in the treaty, I do not think that Conference has now concluded.

Our bill would call upon the Secretary of State to enter international negotiations to come up with international standards for these kind of facilities.

Mr. STUDDS. I see Mr. Moore smiling.

One more question if I may, if I have time, and two, if I can sneak it in.

Do you have any information on the impact these kinds of facilities have on the fisheries?

Mr. CARTER. I do not recall any from these kinds of facilities, as such.

We do have a good bit of information on what offshore drilling platforms, what effects they have on fisheries and I think the simple answer is that in the Gulf area where our offshore facilities have proliferated for the last 20 years, the actual return on fisheries in that area has been increasing.

Mr. STUDDS. I understand the oil companies tell us the best thing we can do for our fisheries is to drill for more oil.

What I would like to know is, from some source other than them, do we have any hard information in studies on what the impact of deepwater ports would be in the fishing area in which presumably they would be located?

Mr. BREAUX. If the gentleman would yield on that particular point; I could stand to be corrected by the Secretary, but if you analyze the effect of drilling platforms located in the Gulf of Mexico, you will find the presence of platforms is not hurting the fishing industry. It has greatly enhanced catches taken off the gulf coast, because of presence of the rigs.

Mr. STUDDS. Do we have any firm information?

I think it is terribly important. I hope it would be obviously important that we have that kind of information before announcing in general terms that this is a safe and desirable thing to do.

You say in your statement that you recognize these deepwater ports will produce onshore developments, but most of us in the committee, I am sure, would like to have an elaboration of that for the record.

The CHAIRMAN. If you can answer that for the record, I would appreciate it.

Mr. HORTON. We will be happy to do so .

(The answer follows:)

The specific developments that would relate to the planned Seadock and Loop facilities are in the hands of the Committee. We are unable to prophesize the extent and cost of associated economic development as this would depend upon market forces and the decisions by local governments to permit or control certain types of development. However, I would add that the demands placed by our fellow citizens are such that production facilities will be constructed in one form or the other here or near our shores to meet these needs. As the number of people increase we must develop new means to satisfy their material needs and yet maintain a healthy atmosphere in which we all can prosper.

The CHAIRMAN. Mr. du Pont?

Mr. DU PONT. Thank you, Madam Chairman.

I would like to focus specifically, Mr. Secretary, on the feelings of the Interior Department in regard to the role of the States.

On page 6 of your statement, you talk about the Secretary consulting the Governors and any structure license under the act will be consistent with the State land use planning program.

You stated in response to other questions by Mr. Murphy and Mr. Breaux, that you have no intention of overriding the wishes of the States; that the role of the States is fundamental and central to the decisionmaking process.

Now, my simple question is, if a State adopts the policy that it does not want a superport, will you abide by that?

Mr. HORTON. Congressman, I will refer you to two steps in my answer to section 103(e) of our proposed legislation which indicates that the Secretary shall consult with the Governor of any State as to the facility proposed to be located to insure that the operation of the facility and directly related land based activities would be consistent with the State land use program.

If the State has a controlling voice over the land based facility, it would be quite obviously impossible to construct an offshore facility that was inconsistent with that.

Mr. DU PONT. That means that the answer to my question is that the Federal Government will yield to the State's policy?

Mr. HORTON. I cannot speak legally as I am not a lawyer, but to the extent I understand your question, the answer is yes.

Mr. DU PONT. Let me restate the question so you fully understand it and the answer will be yes.

You talk about being consistent with the land use program.

Delaware has a land use program which says we do not want superports. Consistent with that, to my way of thinking, there is only one answer, and that is you would concur with the statutory policy of the State of Delaware.

Mr. HORTON. As far as I am concerned, the answer is yes.

I have a lawyer on my right and will ask him to elaborate on that.

If the State controls the location of the onshore facility, and they do not want it, it would be futile to put an offshore facility to which nothing could be attached.

Mr. CARTER. I think that is the right answer, and the reason for not wanting to incorporate in our provision a provision similar to that, some of the other bills before the Congress, that draw in the

State automatically, and there may be situations where, on the basis of a lot of experience, say, in the Gulf where the facilities are presently desired, that they work out well, and if you build in a process of requiring the State to go through some kind of up or down procedure, rather than allowing the State to have a practical and very effective means of precluding that facility if it does not want it, you may be creating time delays and difficulties that are not necessary and without changing the outcome either way.

Mr. du Pont. I understand that, but you are attempting to distinguish between a State like that and a State which already has a clear policy?

Mr. Carter. Yes, sir.

Mr. du Pont. All right, now, turning to page 4 of your testimony, Mr. Secretary, you talked about your belief, and this is the second whole paragraph on that page, your belief that the facility should be located not in areas where existing channels would be deepened but out to sea where the risk of collision would be less.

Mr. Horton. That is correct.

Mr. du Pont. What I am referring to here is the Department of Commerce study that was done recommending a number of sites on the east coast, some offshore, some quite close to shore.

It is the Department of the Interior's conclusion that the offshore sites are better than those closer to the coast?

Mr. Horton. For environmental reasons and safety reasons.

Mr. du Pont. Thank you.

Now, I recognize that you are going to supply for the record your estimates of what has to be built onshore in regard to facilities to match up with the offshore facilities.

You stated earlier that you thought the cost of constructing the superport was in the range of $300 million. Could you give us a ballpark figure as to what you think the shore development would be? Are they roughly equal?

Can we foresee $300 million worth of onshore facilities or half as much or twice as much? Recognizing that you are going to answer in detail for the record, can you give us some idea of the size now?

Mr. Carter. I think it depends on whether you are going to hook up to an existing pipeline and refinery system or whether you are going to build a new one.

If you are just going to hook up to an existing system, then the onshore installation is going to be pretty small in cost.

But if you have to build a new refinery system I believe the cost onshore will be quite a lot greater than the cost offshore.

[The following information was supplied in addition to the above:]

Estimated Cost of Superport Shore and Offshore Facilities

The only two industry activities which have been developed to a point where costs estimates are available are the Seadock and Loop facilities.

The Seadock facility (off Freeport Texas) will cost $310 million to build from the seaward buoys (25–3– miles offshore) to the onshore terminal. The terminal is expected to cost $80 million and the distribution system to the refineries including pipeline pumping stations and breakout storage will cost $155 million. The total is estimated at $545 million.

The Loop (Louisiana offshore Oil Port) facility is estimated to cost $460 million. $150 million from shoreline to buoy and $310 million for the onshore terminal. An additional $88 million will be needed to connect with existing pipeline distribution system.

Mr. DU PONT. Is it not true considering the capacity of these massive tankers and the capacity of an offshore terminal that wherever you put one, you are going to build new refinery capacity because the current capacity will not be able to handle the volume?

Mr. CARTER. They may hook into an existing pipeline system, too, that has been supplying a number of refineries by either domestic production that is producing, or by bringing in crude in small vessels.

In other words, you may just be supplanting your method of delivery but anytime you are going to add new volumes, yes, you are going to have to expand the refinery capacity.

Mr. DU PONT. I hope we are not building superports just to transfer delivery capacity.

In other words, we are going to have to build refineries somewhere to handle this oil or we will not have any net gain. It is your opinion if you have to build refineries the onshore cost would be in excess of the offshore terminal?

Mr. CARTER. Yes, sir.

Mr. DU PONT. Thank you.

The CHAIRMAN. Mr. Lott?

Mr. LOTT. Thank you, Madam Chairman.

Mr. Secretary, pursuing some of Congressman du Pon't questions with regard to the question of location, closing on further out, would you consider if an area had deepwater, say, within 12 miles of the coastline, would that be considered a safe area as far as the possible environmental impact?

Is that considered far enough out?

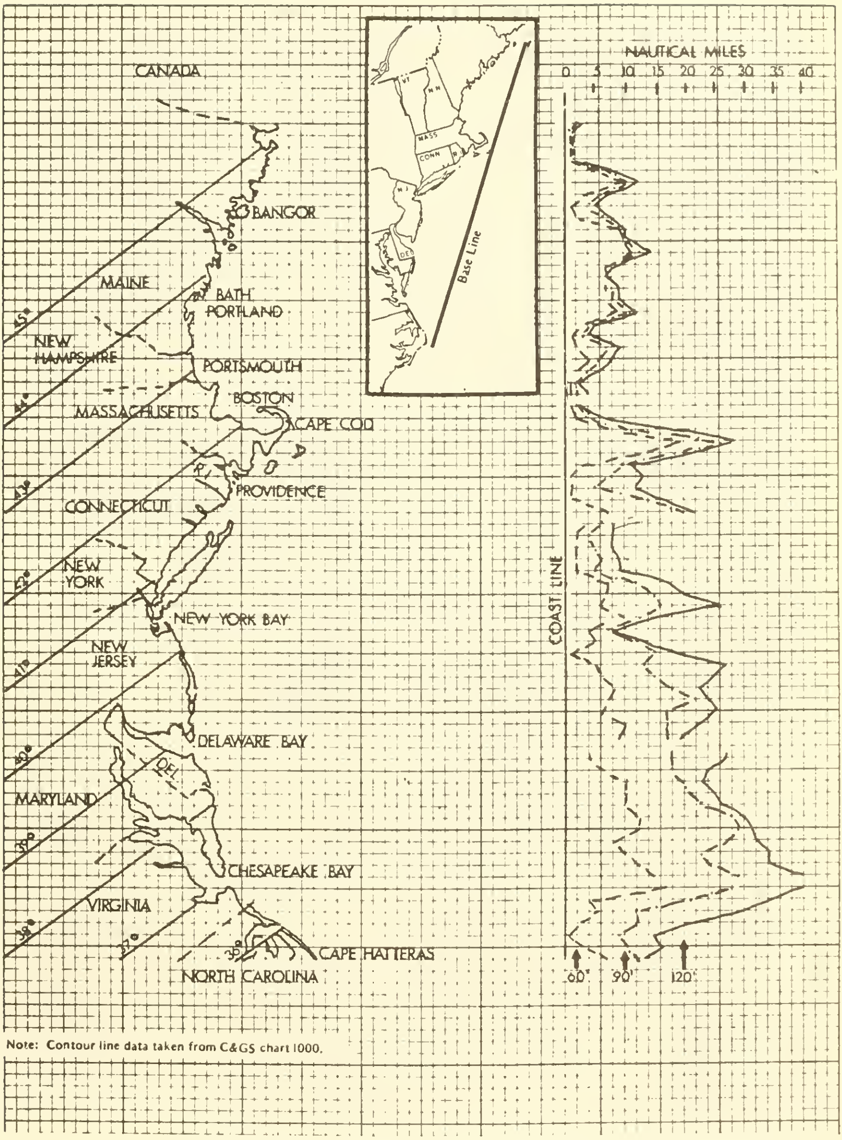
I am trying to get what you mean by close in or far out.

Mr. HORTON. It would be our judgment to think it would be environmentally safe within 12 miles.

With Madam Chairman's permission, I intend to request an insertion that would present a graph diagram that would indicate the distances between the coastline and the 60-, 90-, and 120-foot contour lines off the Atlantic coast, and it would be helpful to the committee to see the varying distances when these various contour lines with respect to specific topographic points like New York Bay, Delaware Bay, Chesapeake Bay, and I will submit that for the record.

[The charts follow:]

FIGURE 2

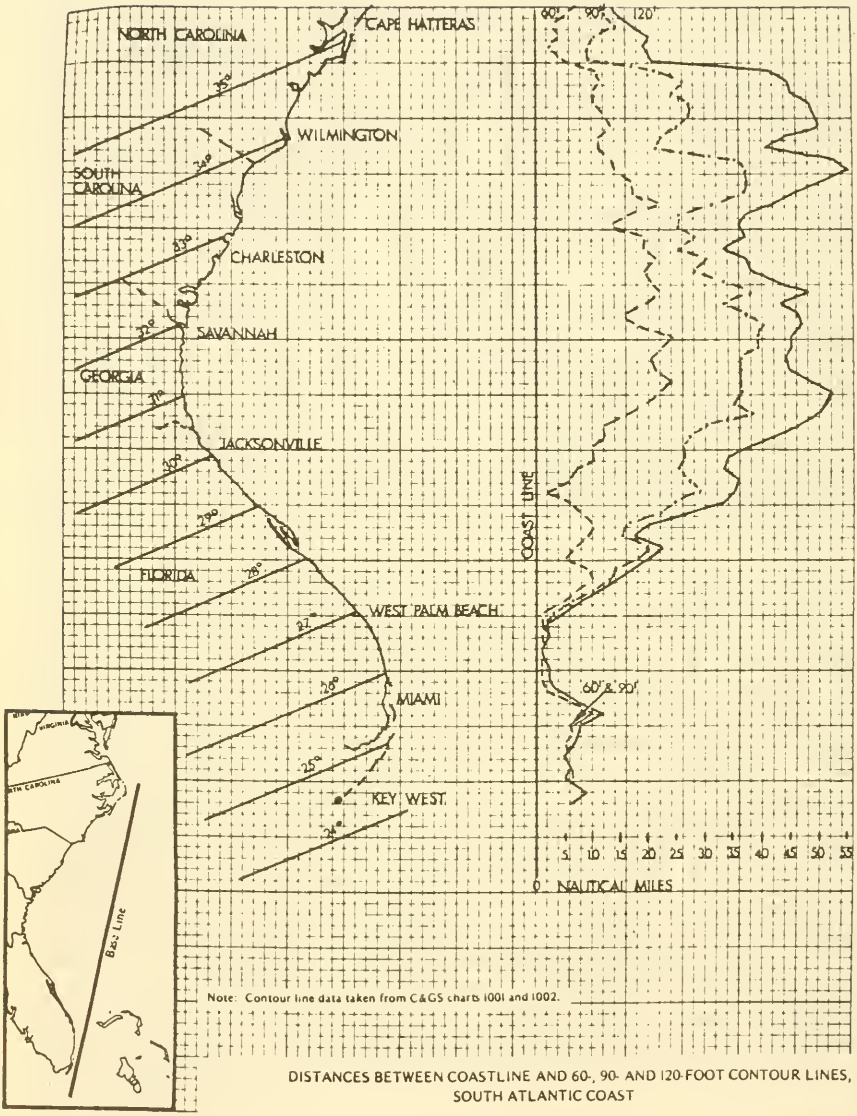


Note: Contour line data taken from C&GS chart 1000.

DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR LINES, NORTH ATLANTIC COAST

Robert R. Nathan Associates, Inc.

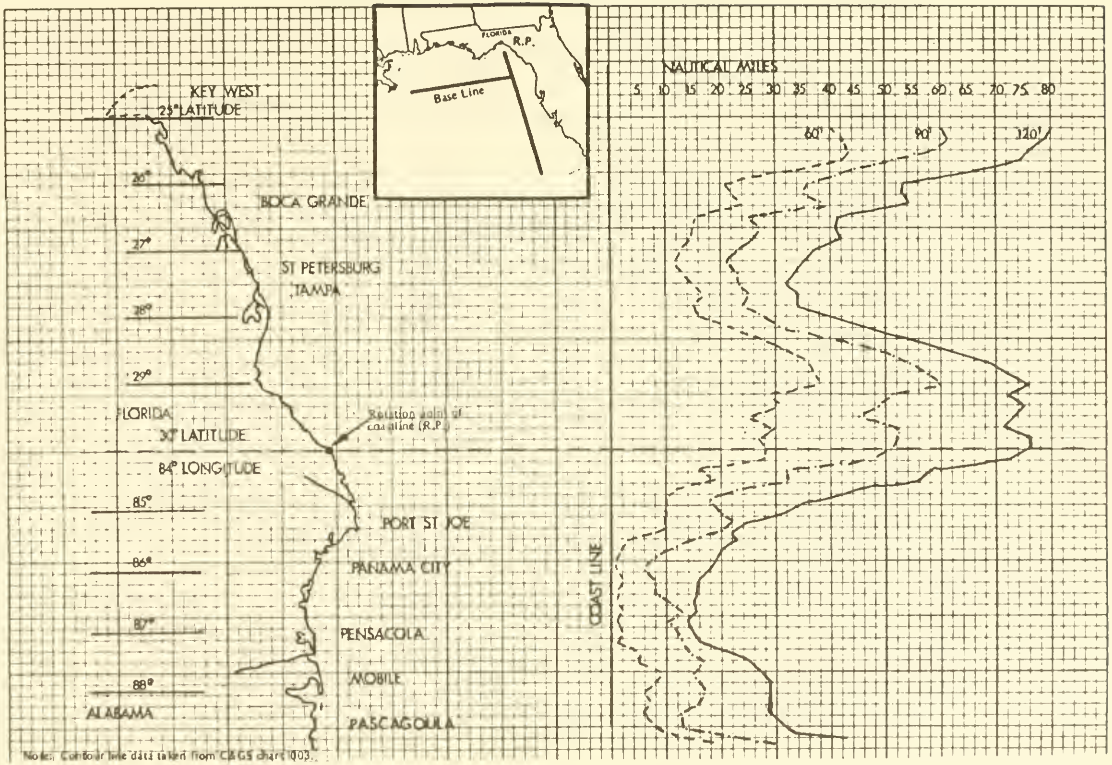
FIGURE 3



DISTANCES BETWEEN COASTLINE AND 60-, 90- AND 120-FOOT CONTOUR LINES, SOUTH ATLANTIC COAST

Robert R. Nathan Associates, Inc.

FIGURE 4

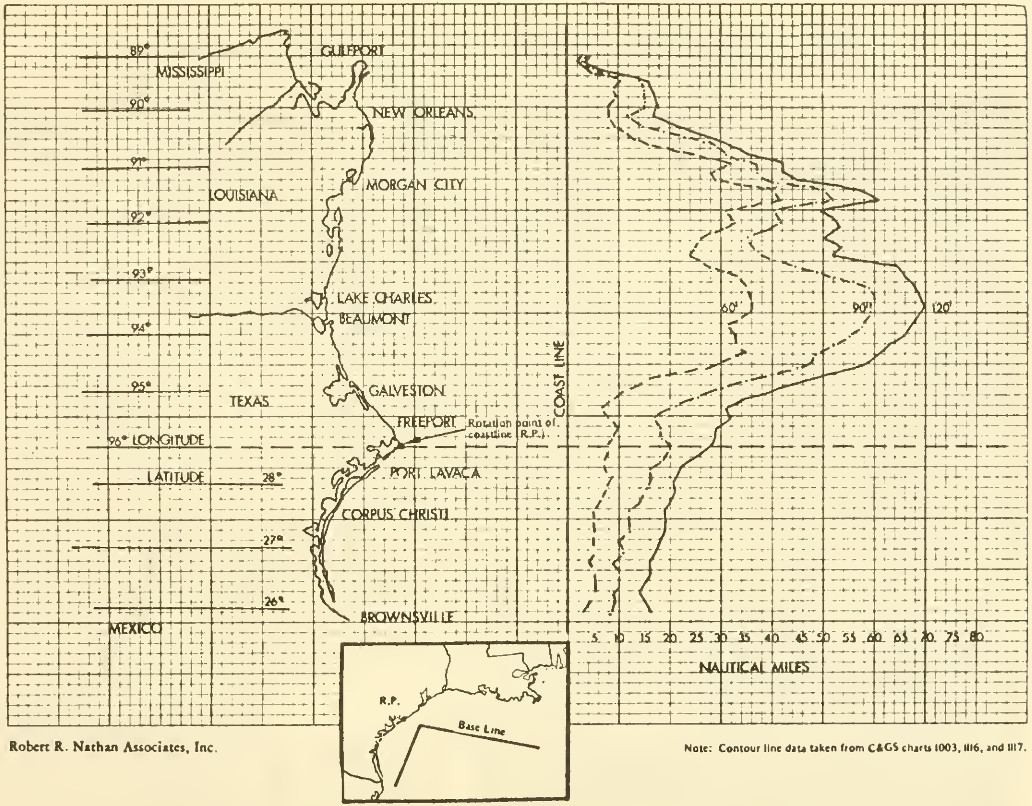


Note: Contour line data taken from C&GS chart 1003.

DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR LINES, EASTERN GULF COAST

Robert R. Nathan Associates, Inc.

FIGURE 5

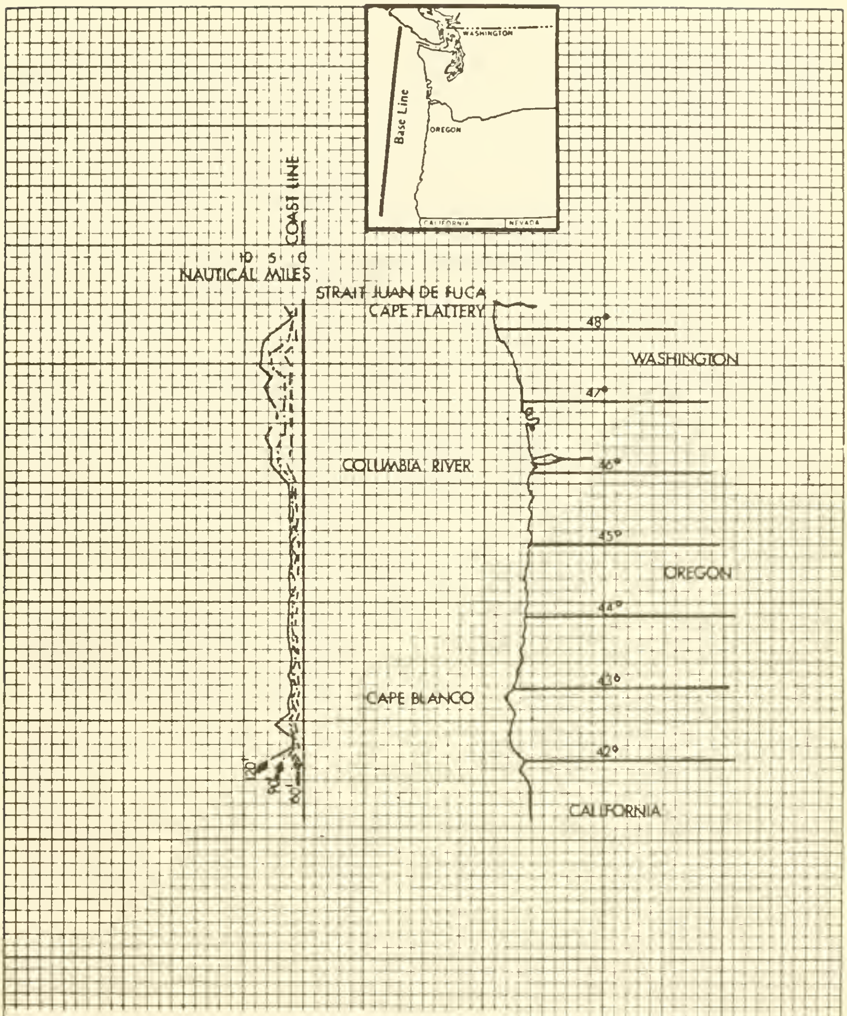


DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR LINES, WESTERN GULF COAST

Robert R. Nathan Associates, Inc.

Note: Contour line data taken from C&GS charts 1003, 1116, and 1117.

FIGURE 6

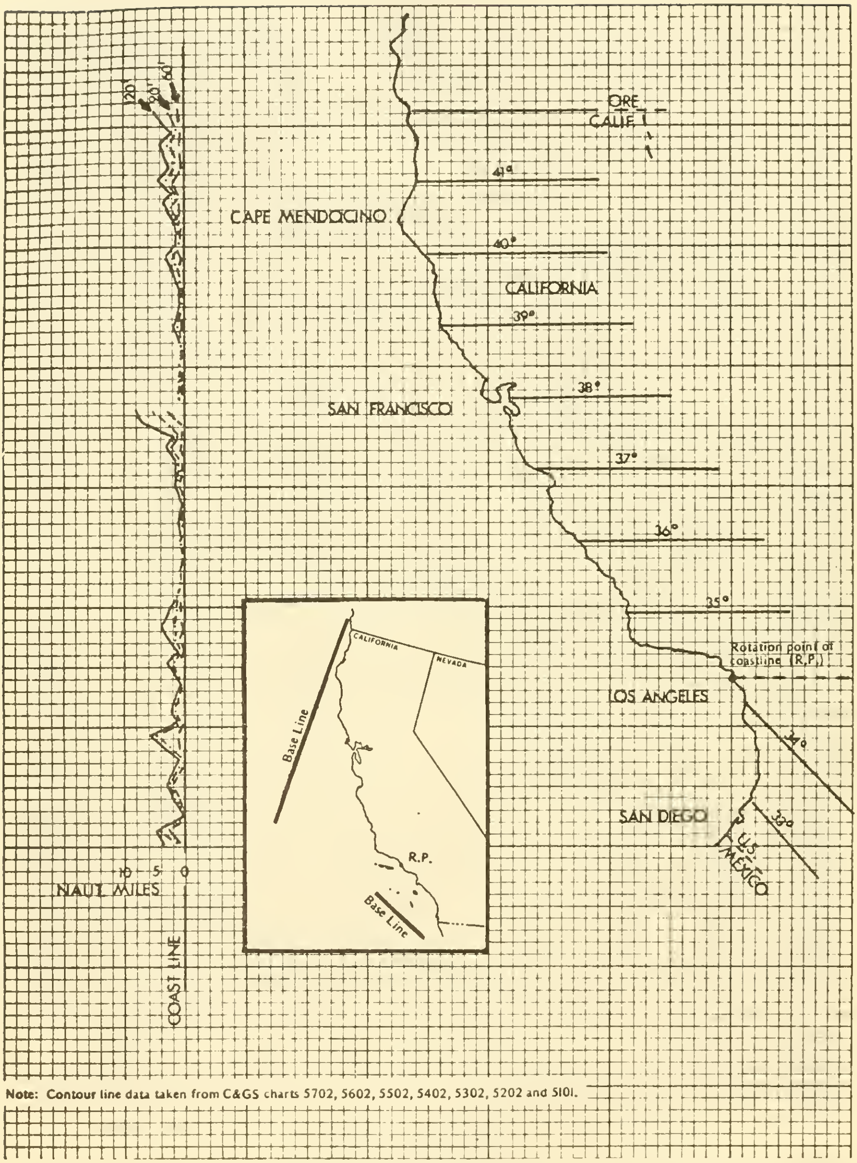


Note: Contour line data taken from C&GS charts 6102, 6002, 5902, 5802 and 5702.

DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR LINES,
NORTH PACIFIC COAST

Robert R. Nathan Associates, Inc.

FIGURE 7



Note: Contour line data taken from C&GS charts 5702, 5602, 5502, 5402, 5302, 5202 and 5101.

DISTANCES BETWEEN COASTLINE AND 60-, 90-, AND 120-FOOT CONTOUR LINES, SOUTH PACIFIC COAST

Robert R. Nathan Associates, Inc.

Mr. Lott. With reference to the location and the number of offshore ports, do you have any idea of how many we may be talking about? Will it strictly be determined by the need? Do you have any idea of how many we might be talking about?

Mr. Horton. At this time, Congressman Lott, we do not have specific figures projected for any specific year like 1985 and 1995.

Mr. Lott. With further reference to the need and following up on what Mr. du Pont was saying, now exactly what do you mean by need for these deepwater ports?

Do you mean to supply existing facilities? Obviously, it appears to me that we are talking about the need for new refineries. Our present refineries are up to capacity and along with what he said, we do not want new systems of supplying these refineries. We need hopefully more refineries and would need to include an economic need of an area for this type of superport?

In other words, if you have an area that has deepwater and could meet the needs associated with the deepwater port but also an area that has the economic need for such a port, would that be a part of it?

Mr. Horton. That would be a consideration. I would think a less important consideration than what we deem to be a national need for energy, but I would broaden that to include an environmental need, then even if we were not to import greater amounts of oil, there would still be an environmental need built into the transfer of oil.

I think the present track record of 30,000 dwt tankers supplying imported oil is not a bright one. The Department has a joint responsibility and we would include the environment as well as the energy.

Mr. Lott. So your number one priority is going to be on environmental?

Mr. Horton. We have co-equal priorities, but I would not indicate that the environmental priority was any less than the energy priority.

Mr. Lott. Will the economic need of an area for the advantages of such a deepwater port be considered?

Mr. Horton. It would be a consideration. I do not believe it would be a controlling consideration.

Mr. Lott. Has any consideration been given since there are so many different agencies and departments involved, and interested, in this proposal, after it gets going. I am wondering who is going to be the administering agency.

Will there be some sort of authority to oversee all of these different interests?

Mr. Horton. We are presently in the Department of Interior extensively examining that.

It is our tentative judgment at this time that the Bureau of Land Management would be the controlling jurisdictional agency in close consultation with the Geological Survey, which in an analogous situation like the administration of the Outer Continental Shelf of oil drilling operations.

Mr. Lott. That is all, Madam Chairman.

The Chairman. Mr. Treen?

Mr. Treen. Thank you, Madam Chairman.

Would either of you gentlemen testifying give us an idea of how we are going to meet the petroleum needs of this nation, both interior States and coastal States, if all of the coastal States in the exercise of their power to prohibit these facilities choose to go that route?

If all of the coastal States say no, we do not want these facilities, how are we going to meet the needs for petroleum that we think are going to peak in 1985, assuming that we do not have a major breakthrough from solar energy, some other source of energy?

What is the alternative?

Mr. Horton. That is one of the critical issues behind this. It is our judgment that there are some States that are more enthusiastic that are approaching deepwater ports than are others.

I do not think we envision that possibility. If that possibility did arise, obviously, it would be before the Congress as to what remedial action might be taken.

Mr. Treen. Are there enough small tankers in existence to bring in the crude necessary, assuming your projections are correct, that the need is about 25 million barrels a day in 1985, of which 52 percent would have to be imported?

Mr. Carter. No sir, there are not enough small tankers in existence and the alternative would be to either dredge our shoreside ports to where they would accommodate the tankers that are being built, or to build many, many more of the small tankers that can get into our existing port facilities.

One of the projections is that by 1985, instead of approximately 4,000 port visits by tankers of, say 30,000 deadweight tons, we would have to have 21,000 port visits in the United States by that size tanker.

The alternative is simply many more port visits by smaller tankers or dredging out the existing port facilities to accommodate the larger tankers.

Mr. Treen. Now, with regard to the second alternative, would it be your judgment we would have as much or more environmental resistance from coastal States or people in the coastal States with regard to dredging than we do to the deepwater facilities?

Mr. Carter. Yes, sir.

Mr. Horton. I might answer very briefly here to provide a synopsis of an outline for the committee record, that of the 5 million tons of oil that pollute the water each year, 29 percent of that comes from auto crank case disposal, 28 percent from the existing tanker traffic, and I will provide further figures to show that 94 percent of the world's pollution comes from tanker operation presently of 80,000 dwt. or less.

[This information follows:]

STATISTICS ON POLLUTION AND TANKER ACCIDENTS—1969–70

Pollution:
- 5 million tons of oil pollute oceans each year:
  - 29 percent auto crankcase oil disposal.
  - 28 percent tankers accidents of all types.
  - 15 percent industrial machinery waste oil.
  - 17 percent other vessels.
  - 6 percent refinery/petroleum chemical plant disposal.
  - 2 percent offshore production.
  - 2 percent tank barges.

1416 tanker casualties occurred in a 2 year period 1969–70.

Some pollution occurred in at least 269 tanker accidents:

30 percent collisions.
26 percent groundings.
19 percent structural failures.
9 percent rammings.
7 percent fires.
6 percent explosions.
3 percent other.

Of the 430,000 metric tons of oil outflow from tanker accidents in the 1969–70 period:

49 percent came from structure failure of ships.
29 percent came from groundings.
8 percent came from collisions.
7 percent came from explosions.
14 percent came from breakdowns.
1 percent came from fires.

Important to note:

Tankers below 80,000 DWT accounted for 92 percent of casualties and 94 percent of pollution and 94 percent of the world's tanker fleet and 68 percent of the total deadweight tonnage.

Tankers over 80,000 DWT accounted for 8 percent of casualties contributed 6 percent of pollution, 6 percent of the world's tanker fleet and made up 32 percent of the deadweight tonnage.

Thus, tankers 80,000 DWT and larger can transport oil about seven times safer than tankers below 80,000 DWT from a viewpoint of tanker casualties and subsequent pollution.

The 430,000 tons of oil spilled occurred in the following places:	*Percent*
At Sea	56
Near land	43
Coastal	14
Entrance	19
Harbor	5
Pier	5
Unknown	1

95 percent of under water pipeline spills between 1967–72 caused by ships anchor damaging unburied pipeline.

Source: Tankers and U.S. Energy Situation—An Economic and Environmental Analysis. Joseph D. Porricelli and Virgil F. Keith.

Mr. TREEN. You point out these newer larger tankers are safer because they employ a better technology.

Mr. HORTON. That is correct.

Mr. TREEN. Well, fortunately, as Congressman Breaux has alluded to, we in Louisiana very much want one of these facilities and check me, John, if I am wrong, but I do not think we will have resistance there.

Hopefully, through the Louisiana coast, we will be able to meet a large portion of the energy needs of this country.

Under the administration's bill, is it anticipated that the Secretary of the Interior will issue licenses, that is, that he will be required to, assuming that the criteria is met that is set forth in the bill?

Mr. HORTON. Following consultation with interested Federal and State agencies.

Mr. TREEN. Aside from the State; in other words, it would be mandatory, in effect, that a license be issued if the criteria is met?

Mr. HORTON. That is correct.

Mr. TREEN. Under the bill that we are considering here today, H.R. 5091, sponsored by the Chairman of this committee and others, section 43(b) provides that the Secretary "may" give certification.

Would you interpret this bill to mean this is discretionary? If you have not studied it, I would not expect you to be able to respond to that, but if you have, do you interpret this bill to mean there would be discretion, even if all the criteria were met and no problems with the environment and so forth, that it is still up to the Secretary of Interior to use his discretion?

Mr. HORTON. Legislative counsel is examining that.

I think we are not prepared because we have not examined the Chairlady's bill in detail, to answer specifically, but I believe there is a greater degree of discretion under the committee bill than under the departmental bill.

Mr. ALLEN. That is the way I read it, from a brief scanning of it.

Mr. TREEN. Turning to a point raised by Congressman Breaux about the sublicensing, I think that he was alluding to the fact that your bill provides in section 103(g) that licenses issued hereunder may be transferred after the Secretary determines that the transferee meets the requirements of this Act, and as we have already observed, under your bill, a State or local agency could be a licensee, and then transfer that license to some other person under this bill, a private business, for example. Would that be a correct interpretation?

Mr. HORTON. As long as a third party accepted in full the other responsibilities of the Act.

Mr. TREEN. Yes, I understand that. That is explicit in your bill that the transferee must meet the requirements.

Do you see any contra-indication in the bill to the State, assuming the State obtains the license, attaching conditions to its transfer of the license?

In other words, if these conditions did not offend any requirement in the Act, do you see any reason why the State, before it transferred the license, so to speak, attached some conditions to that transfer?

Mr. HORTON. I think as long as they were no less environmentally stringent than the Federal regulations, I see no reason why they could not attach additional stipulations.

Mr. TREEN. Thank you.

The CHAIRMAN. Mr. Pritchard?

Mr. PRITCHARD. Thank you, Madam Chairman.

There is not any question that we have an energy crisis, is there?

Mr. HORTON. We have an important energy dilemma.

Mr. PRITCHARD. Involving a shortage of oil, is that right?

Mr. HORTON. With important considerations also being given to the network of transporting the energy.

It is not simply the source of energy we are concerned about. It is the means of finding it and transferring it.

Mr. PRITCHARD. And this crises, it is going to be a growing problem?

Mr. HORTON. Certainly.

Mr. PRITCHARD. Some people are now making statements that the current energy crisis is a sort of a gimmick that the oil companies are using for policing their merchandising areas. There is no question in your mind that this is an actual shortage? And there will be a shortage?

Mr. Horton. I think we would agree to that. We have to be cautious how we define the word "crisis" but nonetheless, this is a fundamental question before the Nation at the present time.

Mr. Pritchard. I think it is going to make it more difficult for us to come up with a solution if the public is beginning to believe that this "crisis" is some sort of put on that the oil companies have put together so they can get the "independents" out of the way.

The Chairman. Mr. Pritchard, before you ask another question, I would like to make an announcement that the committee will recess as soon as we have heard all of our colleagues and then reconvene at 1:30 this afternoon to hear Mr. Moore, from the State Department, and Dr. Johnson from Treasury.

Mr. Pritchard. I will try to be brief.

Mr. Horton, I am a little disturbed. Who in your organization has gone over and seen some of these platforms or offshore facilities? Have you seen any of these?

Mr. Horton. No, but I am confident the professional engineering inspectors for the Geological Survey and others associated with the BLM have seen it.

Mr. Pritchard. But no one on your staff has ever seen one of these facilities?

Mr. Horton. No, but the Bureau of Land Management would be part of my staff, and they work in close consultation with the Geological Survey.

Mr. Pritchard. Are any plans being made to have deepwater facilities in the northwest part of the United States?

Mr. Horton. Well, the legislation would provide for the examination and the application of sites anywhere on the American OCS, but at this point, apart from two proposals in the gulf coast, I know of no other specific proposals to locate deepwater ports.

The legislation would not preclude their location in the northwest if there were an economic need for them.

Mr. Pritchard. But you have undoubtedly seen studies and proposals dealing with the northwest. Unlike Mr. Treen's area, we have a lot of serious questions about having supertankers coming into our area, even offshore.

Mr. Horton. If it is my memory that district five, including the States of California, Oregon, and Washington, have a shortfall of about one-third less than their total demand for oil.

This being the case, oil from outside must come in, either from other districts or from imported sources, so we project that that gap will widen with time. It would be important voices speaking toward importing more oil as well as greater production within that district.

Mr. Pritchard. Is any of this tied in with the Alaska oil?

Mr. Horton. Well, Alaska, obviously, will help fill that gap.

Indeed, Mr. Carter will correct me if I am wrong, but by 1985, if we can project 2 million barrels a day, coming from the North Slope, it would substantially fill the gap at that year.

Mr. Pritchard. In other words, are you talking about the national gap or just the gap in the area?

Mr. HORTON. In district five.

Mr. PRITCHARD. In other words, it appears that the west coast could take up the oil from the North Slope, is that right? We would balance up?

Mr. HORTON. It is certainly the administration's proposal.

Mr. PRITCHARD. Then reasons exist for not extending a Canadian pipeline all the way into the Midwest. The need is going to be on the west coast. We could save ourselves a lot of money.

Mr. HORTON. That is correct.

Mr. PRITCHARD. I am glad to get your views.

I have a number of questions, but I will just send them to you by letter.

The CHAIRMAN. I hope that we in the Midwest will not have to do without oil.

Mr. Dingell?

Mr. DINGELL. Thank you, Madam Chairman.

Gentlemen, the question was directed to you as to the time in which provisions of the National Environmental Act would come into play under H.R. 5898, and I would appreciate your answer, not at this time, but by appropriate written response to the record.

[The following was supplied in response to the foregoing:]

We would interpret H.R. 5898 as in no way altering the requirements of the National Environmental Policy Act regarding the issuance of an environmental impact statement. We anticipate that an impact statement will be required in connection with the issuance of any permit for a deepwater port. The Administration's proposal explicitly so requires.

Mr. DINGELL. Gentlemen, I note also that there are a number of Federal statutes relating to water, water quality, and construction affecting water, such as the Marine Protection and Sanctuary Act, the Federal Pollution Control Act, and amendments, the recent Ocean Dumping Act, National Environmental Policy Act, and the Coastal Zone Management Act. I would appreciate it if you would give us a statement as to how those different statutes would impinge upon the legislation before us.

[The following was supplied in response to the foregoing:]

Where existing legislation as administered by the various Federal Agencies is applicable to the construction and operation of a deepwater facility off our shores and beyond the 3 mile limit, the appripriate federal agencies will continue their administration. Section 104(c) of HR7501 expressly states that the Secretary will not issue a license under this Act until he has been notified by such agencies that the application meets the requirements of the laws which they administer.

Mr. DINGELL. I would also appreciate your attention directed, if you please, to whether or not the deepwater port legislation is needed in the light of the authorities already vested in the Federal Government, the Interior Department, and the Commerce Department, by reason of these sundry and different statutes.

[The information requested follows herewith:]

None of the legislation referred to clearly authorizes the issuance of permits (or licenses) for deepwater ports beyond our territorial sea.

The statutes referred to establish programs to regulate certain water related activities. However, if the deepwater ports licensed under the authority of the bills pending before Congress are to be properly regulated to assure navigational safety, environmental protection and the other purposes of the statutes referred to, those statutes should be made to apply to the deepwater ports. The Administration's bill expressly does this. It does not create an overlapping regulatory jurisdiction in the Department of the Interior.

Mr. DINGELL. Have you completed a departmental analysis of the different bills pending before the Congress? There are some pending in several Committees.

Mr. HORTON. The answer to your third question is yes, and with the chairman's permission, we will answer the first two for the record.

Mr. DINGELL. I would just as soon have you submit those rather than take the time of the Committee at this time.

Mr. HORTON. We partially answered your second in the prepared statement.

We believe the authority is uncertain at this time. We are seeking additional authority.

Mr. DINGELL. I do not entirely agree with that last statement, and I would like to have a clearer statement.

You have made a clear statement as to the position of your Department with regard to State veto, construction of offshore ports on the high seas, outside the territorial seas, outside the coastal zone.

Mr. HORTON. We have attempted this morning to state as clearly as we can.

Mr. DINGELL. Do you favor it or do you oppose it?

Mr. HORTON. You elaborated beyond the point, I think. You were looking at various jurisdictions within the three-mile limit, onshore and beyond the three-mile limit, is that the thrust?

Mr. DINGELL. Yes, I am concerned with your attitude with regard to the authority vested in the States by the Submerged Lands Act.

Mr. HORTON. We have not intended today to indicate they would have a specific veto authority over OCS lands outside the 3-mile limit.

Mr. DINGELL. Do you favor or not favor?

Mr. HORTON. We favor a partnership role with the States.

Mr. DINGELL. But no specific veto?

Mr. HORTON. That is correct, on areas on which they have no jurisdiction.

Mr. DINGELL. Construction of these ports is going to take all kinds of industrial development, petro-chemical development, onshore, satellite industries, etc.

Have you tied any legislation that you have into the coastal zone management legislation?

Mr. HORTON. Congressman Dingell, we have tied this into the administration's National land use policy legislation, which gives authority to the States to control those types of critical development.

Mr. DINGELL. I get from you and other witnesses who have been before this committee, an idea that you intend to pick and choose the legislation that you look with favor on and Congress passed by a rather overwhelming margin the coastal zone management legislation.

I have a feeling it is receiving benign neglect.

Mr. ALLEN. If I can amplify that, the language that Secretary Horton was referring to is the requirement of consultation with

State Governors to insure that the licensing of the facility is consistent with the State land use programs.

We contemplate the Coastal Zone Management Act, to be a State land use program for the purposes of this language, and therefore, we would require the facility to be consistent with the coastal zone management program.

We are also hopeful, as you know, that Congress will pass the broader National Land Use Policy Act and then the deepwater port facility would also have to be consistent with that land-use program as well.

Mr. DINGELL. I am happy to hear you say that, and I trust you gentlemen will stand very vigorously on that position because I intend to quote it back to you later on.

Mr. ALLEN. This was the point the Department of Commerce was insistent on and the administration agreed with them, and that is our position.

Mr. DINGELL. I have no further questions.

The CHAIRMAN. Mr. McCloskey?

Before you begin, I would like to say to Mr. Horton, that the committee will be furnishing him with a series of questions which we are not able to ask at this time. Mr. Horton, would you please kindly respond as quickly as possible and concisely as possible, so we may have that for the record, to study?

We would be happy to have you submit the report that you have from the Coast Guard, and we will place in the record as much of it as we consider appropriate.

Mr. McCloskey?

Mr. McCLOSKEY. Mr. Horton, in your testimony, where you talk about petroleum needs by 1985, what is the figure you are using for the total domestic demand?

Mr. HORTON. Let me check it.

I believe it is 26.5 million barrels a day.

Mr. McCLOSKEY. That is against the current use of what?

Mr. HORTON. It is about 18 million barrels of oil a day.

Mr. McCLOSKEY. Now, can you translate the size, this term "deadweight tons" you refer to the Shell Oil tanker that is ordered, 530,000 deadweight tons.

How many barrels of oil can be carried in such a tanker?

Mr. ALLEN. The standard rule of thumb is that there are 7½ barrels per deadweight ton, so if you multiply the 530,000 times 7½, you will get the number of millions of barrels that that tanker can carry.

Mr. McCLOSKEY. What was the size of deadweight tons of these two tankers that collided in San Francisco Bay several years ago?

They were referred to as 10,000-ton tankers, I believe.

Mr. ALLEN. They would probably have been.

That was a common size of tanker, 10 or 15 years ago.

Mr. McCLOSKEY. Will these 530,000 ton deadweight ships get into San Francisco Bay?

Mr. HORTON. No, sir, they cannot.

Mr. McCLOSKEY. If these tankers come into common use with the Alaskan oil pipeline, would there not have to be an offshore facility constructed off California?

Mr. HORTON. If that oil were to go to San Francisco, the answer is yes.

Mr. McCLOSKEY. Is there any port in California that can take a 500,000 deadweight tanker?

Mr. HORTON. Long Beach can take about 100,000 ton tankers.

Mr. McCLOSKEY. Your super is what, 200,000 deadweight tons?

Mr. HORTON. Or more.

Mr. ALLEN. The Pacific Coast, as you know, slopes off much more steeply than the Atlantic Coast, and there is a good bit of deep water close in.

Mr. McCLOSKEY. You are going to furnish, as I understand the contour intervals of what, 60 feet?

Mr. HORTON. Sixty, 90, and 120 feet.

Mr. McCLOSKEY. Mr. Horton, I have not been aware that the Department of the Interior was responsible for furnishing energy.

Does that mean we hold the Department responsible for the current energy dilemma?

Mr. HORTON. I am not sure that that was the main thrust to earlier questions. I think we might have hedged on that point.

Mr. McCLOSKEY. Your testimony on page 5 says Interior has the fundamental responsibility for assuring the Nation with an adequate supply of energy. Is that correct?

Mr. HORTON. That is a correct statement.

Mr. McCLOSKEY. Why are we in the current dilemma? Who, in Interior, made the error?

Mr. HORTON. You are attempting to correlate between our primary responsibilities for energy development and what we call the present energy dilemma.

Mr. McCLOSKEY. I am trying to correlate your statement and your prepared statement, and your statement that we are now in a dilemma.

What led to this dilemma? Who made the mistake and when?

Mr. HORTON. Well, the dilemma, essentially, is a measure of the increased population of the country, and also the increased energy demand, per capita.

Mr. McCLOSKEY. This was all predicted by Interior some years ago, was it not?

Mr. HORTON. I think that we cannot simply look toward the Department or the administration or the Federal Government, or even all of the State governments, towards resolving what is essentially a national policy, a public problem.

Mr. McCLOSKEY. If I understand your testimony correctly, Interior is charged with anticipating demand and assuring an adequate supply to meet this demand.

Interior apparently has not done this in past years, I gather from your testimony, is that correct?

Mr. HORTON. I would say this is one of the primary reasons we are here today with a proposal to get congressional authorization to build deepwater ports, and anticipating the demand in the years ahead.

Mr. McCLOSKEY. Let me go back to the west coast proper. If there is only one port on the west coast to take these large tankers, then is it part of your planning that there will have to be an offshore facility constructed off the west coast to meet increasing demands of the west coast?

Mr. CARTER. Congressman McCloskey, if I recall correctly, the projected ship sizes and numbers to bring the oil from the Alaska pipeline to the west coast port, there are a series of different sizes of new vessels that are projected, and I do not believe many of them envision the massive tankers.

I will supply you with a breakdown of how we now understand that a vessel of that size, if I am correctly informed, is not really an economic unit in that short a trip, that you are talking about 80,000 deadweight-ton tankers and a few 120,000 deadweight tankers that can get into Long Beach, but San Francisco would have the 80,000 ton, and so on down the line.

None of the huge ones would be in the trade.

Mr. McCLOSKEY. Thank you, Madam Chairman.

[The information follows:]

The projected tanker size for movements of oil from Alaska to West Coast ports is as follows:

Into Puget Sound—up to 120,000 DWT.
Into San Francisco—up to 80,000 DWT.
Into Los Angeles—up to 120,000 DWT.

The CHAIRMAN. Well, thank you very much, Mr. Secretary, for your testimony and those who appeared with you.

The questions will reach you quickly, and you will have the answers forthwith.

Mr. HORTON. Thank you, Madam Chairman, and we will do our best to respond to your questions in as expeditious a time frame as possible.

The CHAIRMAN. The committee is in recess until 1:30.

[The questions and answers follow herewith:]

Question 1. Provide a complete listing of all laws administered by the Department of the Interior which would have impact upon, be affected by, or apply to the construction and operation of deepwater ports (include code citation and rationale for its application or non-application). In the same context, which of these laws will require specific amendment or repeal or modification if H.R. 7501 or similar legislation is enacted?

Answer. Migratory Bird Treaty Act (1918) 16 U.S.C. 703–711.

Fish and Wildlife Coordination Act (1934) 16 U.S.C. 661–666C.

Federal Aid in Fish Restoration Act (1950) 16 U.S.C. 777–777K.

Fish and Wildlife Act of 1956 16–U.S.C. 742a, 742j.

Sikes Act (Act of September 15, 1960) 16 U.S.C. 670a, 670c.

Cooperative Research and Training Units Act (1960) 16 U.S.C. 753–753b.

Anadromous Fish Conservation Act 16 U.S.C. 757a, 757f.

Estuary Protection Act 16 U.S.C. 1221–1226.

Endangered Species Conservation Act of 1969 16 U.S.C. 668a.

Water Bank Act of 1970 P.L. 91–559.

National Wildlife Refuge System Administration Act of 1966 16 U.S.C. 668dd–668ee.

Convention between the Government of the United States of America and the Government of Japan for the protection of migratory birds and birds in danger of extinction and their environment (1973)—Ratified 3/27/73.

Outer Continental Shelf Lands Act, 1953, 43 U.S.C. 1331.

National Environmental Policy Act, 1969, 42 U.S.C. 4321 et seq.

The Land and Water Conservation Fund Act, 1964, 16 U.S.C. 460 1 4–11. Under this Act, the Department makes grants to States to develop and acquire outdoor areas, including beaches.

Water Resources Planning Act, 1965, 42 U.S.C. 1962. Assists the Secretary in his role as Chairman of the Water Resources Council.

Attached is a list of Federal laws relating to sport fish and wildlife which describes the objectives of these acts.

Question. Provide a complete and detailed listing of the specific areas of expertise which the Department of the Interior possesses under existing law or executive order, in relation to the construction and operation of deepwater ports, in sufficient form for the Committee to evaluate the merits of designating the Department of the Interior as lead agency, under the legislation, for deepwater ports.

Answer. In a functional sense this Department—

(*a*) Has responsibilities for monitoring and projecting supply-demand trends of all energy sources, for identifying potential or existing imbalances, and for recommending measures to maintain equilibrium between energy needs and energy supply.

(*b*) Has responsibilities for evaluating, initiating and managing actions related to the development of public land and Outer Continental Shelf (OCS) energy resources in a manner consistent with multiple-use objectives and in coordination with a variety of Federal, state and local governments and broad spectrum of concerned public groups. Our experience with oil and gas pipeline design, construction, and operation is particularly pertinent to deepwater port pipeline and platform systems.

(*c*) Has broad management experience in assessment and protection of fish and wildlife species and coastal and wetland resources. Responsibilities include the determination of water quality standards, coordination and consultation with governmental, public or private organizations on matters effecting protection of fish and wildlife resources and aquatic habitat and, the development of biologically sound management programs in cooperation with State and local agencies, which will insure a balanced program on conservation and the protection of rare, threatened, and endangered species.

(*d*) Has experience in establishment and management of wildlife refuges, national parks, monuments, seashore sites, wilderness areas, underwater preserves, recreational sites. Responsibilities are directed toward public use and protection of these designated facilities and other scenic and esthetic resource values.

Specific authorities of the Department bearing on the development and operation of deepwater port facilities are:

The OCS Lands Act of 1953.
Fish and Wildlife Coordination Act (1934).
Anadromous Fish Conservation Act.
National Wildlife Refuge System Administration Act of 1966.
Estuary Protection Act.
Endangered Species Conservation Act of 1969.
National Environment Policy Act of 1969.
Water Bank Act of 1970.
Convention between the Government of the United States of America and the Government of Japan for the protection of migratory birds and birds in danger of extinction and their environment (1973).

The Department of the Interior has specific program responsibilities as well as ongoing field organizations which we view as applicable to the administration of a deepwater port program. These responsibilities include:

Administration of a multiple-use management program for public lands, both onshore and offshore. In particular, for the past 20 years, the Department has managed the Outer Continental Shelf Mineral Leasing Program for the development of marine reserves of oil and gas. In this context, we conduct environmental analyses and prepare impact statements, formulate and fund contract studies, and maintain an ongoing evaluation of the role of OCS oil and gas with relation to the total federal energy program.

Conduct of surveys and the development of data and information concerning the land and its resources both on the mainland and the Outer Continental Shelf. Also regulation of oil and gas production on the OCS including platforms and pipelines to shore.

Determination of detrimental effects on fish and wildlife resources from potential polluting activities and for preparation of reports estimating wildlife benefits or losses submitted to Congress along with any reports recommending authorization of new projects for water use. Wildlife surveys and investigations are made in waters controlled by any Federal agency and before Federal permits or licenses are issued, requesting parties must consult with the Fish and Wildlife Service regarding conservation of wildlife resources. Conservation and management programs involving aquatic habitat require specific biological expertise which is highly pertinent to development and operation of Deepwater Ports.

It should also be recognized that the National Environmental Policy Act has led to the regular and continuing involvement of this Department in leading the interagency involvement in assessing the environmental impact of lease sales on the outer continental shelf as well as the coastal and estuarine zones. The process of balancing all the considerations involved in oil and gas lease sales would be similar to those involved in a deepwater port license. The details and mitigating actions required in considering a planned and proposed deepwater port are also the same as our present involvement in approving and monitoring the construction and operation of ocean floor pipelines and offshore platforms. The proposed National Land Use Policy Act would authorize this Department to make grants to States, to develop land use planning programs, to which the licensing and regulating of a deepwater port terminal would have to conform. Further, the Departments responsibility for managing wildlife refuges, and National Seashore Recreation Areas will require the same coordination with the deepwater port licensing program as is now required with OCS lease sales and related activities such as pipelines and onshore gathering facility construction.

Under all these programs, the Department is required to maintain a constant liaison with a wide variety of public and private groups. For example, the Department now has contacts and working relationships with the following Federal, State, and private organizations.

Federal

Environmental Protection Agency.
National Oceanic and Atmospheric Agency.
Coast Guard.
Corps of Engineers.
Treasury.
Atomic Energy Commission.
Federal Power Commission.
Transportation.

State and Local

Governors.
Attorney-Generals.
Federal-State Program Coordinators.
State Geologists.
Natural Resource Divisions.
Environmental Divisions.
Operation and Procurement Divisions.
Coastal Zone Planning Groups.
Regional Compact and Planning Organizations.
Local and County Governments.
State Legislators.

Public

Industry.
Conservation Groups.
Academic Groups.
Contractors.
Chambers of Commerce.
Individuals.

In addition to the specific Acts mentioned earlier, the following Acts are the authority for many activities of the Department affecting fish and wildlife resources which require coordination with Federal, regional, state or local governments entities and private or public parties, organizations or institutions.

Migratory Bird Treaty Act (1918).
Federal Aid in Fish Restoration Act (1950).
Fish and Wildlife Act of 1956.
Sikes Act (Act of September 15, 1960).
Cooperative Research and Training Units Act (1960).
Anadromous Fish Conservation Act.

Question 3. In reference to Mr. Horton's comments on pages 30 and 31 of the transcript, would the Department of the Interior favor or oppose limiting the licensing of deepwater ports for the purpose of transshipment of oil and oil products only as opposed to H.R. 7501 which talks in terms of transshipment of "all commodities".

Answer. The Department of the Interior would prefer to maintain the flexibility provided for in section 102(b) of H.R. 7501. However, we would not strongly oppose limiting the licensing authority to oil and oil products.

Question 4. On pages 47 and 48, Interior's testimony indicated that the pipeline would be subject to a separate permit as opposed to being considered an integral part of the deepwater port permit. In light of the basic purpose of H.R. 7501—to provide a simple, but complete agency process to review the merits of each application—present a more detailed explanation and rationale for this concept.

Answer. The basic purpose of H.R. 7501 is to create a simple, complete process to review applications for and to regulate the construction and operation of deepwater ports without duplicating existing review and regulatory mechanisms. Since the Secretary of the Interior already has authority under the OCS Act to grant pipeline rights-of-way across the submerged lands it was thought to be simpler to expand this authority rather than to create a new authority for pipelines from deepwater ports. However, this is not considered a major feature of the legislation, and we would not take strong exception to including the pipeline as part of the facility.

Question 5. "On page 49 of your testimony, you expressed confidence that operation of the deepwater port would be safe—given the right set of regulations. Exactly what does your agency envisage in this regard? Who will issue these regulations and which agency will be responsible for their enforcement? Under H.R. 7501, it appears to be contemplated that the Secretary of the Interior would issue all regulations pertaining to all matters concerning the construction and operation of deepwater ports. Is this the correct interpretation, and if not, please propose appropriate bill or report language in that regard."

Answer. The regulations that will be applicable to constructing and operating a deepwater port facility in the high seas are those Federal regulations that would now apply to such a facility if it were built within the three mile limit. These include regulatory programs presently administered by a number of Federal agencies: EPA water and air quality and ocean dumping programs; Corp of Engineers regulations pertaining to navigation hazards in coastal waters; Coast Guard navigation and versed safety programs; and oil spill prevention programs; D.T. pipeline safety regulations; 1 cc common carrier regulations; Department of Justice Anti-Trust and criminal jurisdiction, and others. In addition, Interior would issue and enforce regulations relating to environmental protection and other matters deemed necessary to implement the deepwater port licensing program.

Question 6. Kindly supply two copies of the reports referred to by Mr. Carter on page 49 of Interior's testimony.

Answer. The reports referred to were based on oral communications with the Coast Guard, California oil companies and marine researchers. Our best information is that there are no authorative records on off-loading spills.

Question 7. Kindly supply for the record answers to Congressman Forsythe's questions on pages 50 and 51 of the transcript pertaining to the Alaskan Pipeline.

These questions are: What is the potential of the Alaskan oil considering not only the potential of one pipeline, but the total resources available?

Answer. The estimate of proved reserves in the Prudhoe Bay Field is about ten billion barrels. These reserves are equivalent to the operation of the Alaskan Pipeline at capacity of two million barrels per day for about 13 years.

The delay in the Alaskan Pipeline has resulted in little exploration activity on the North Slope for the past few years. When the pipeline construction starts, renewed activity searching for oil will take place. Estimates of potential oil reserves which might be found are purely speculative and might range from the finding of additional small reserves to the discovery of additional large fields such as the Prudhoe one. Most of the western part of the North Slope area is in the Naval Petroleum Reserve No. 4. Exploration on this Naval Reserve would require action by Congress.

Question 8. "In relation to pages 52 and 53 of Interior's testimony, provide for the record a detailed and comprehensive synopsis of exactly how oil and gas exploration permits for the construction of extraction terminals on the Outer Continental Shelf is evaluated and handled by the Department of the Interior."

Answer. Prior to the issuance of exploration permits, leases must be awarded. This involves a competitive lease sale held by the Department using a sealed bidding process and determining whether a lease should be issued to its high bidder. Once a lease has been awarded, applicant must apply for an exploration permit. The applicant for a permit to construct a structure on the OCS includes with his application a map showing the proposed location, geological and geophysical data supporting the chosen site, engineering data supporting and economic data justifying the need for the structure. Department geophysicists review subsurface data supplied by the applicant along with data on file within the Department. Emphasis is placed upon the determination of any faulting, deep-seated and near-surface, that may be in the area and on indications of unstable bottom conditions. Department geologists review nearby core data, well data or data from previous construction for additional data on bottom conditions, bearing capacity of bottom sediments and reaction of sediments when under stress in heavy storms. In many cases the Department may have more recent data, "higher resolution" data or confidential data not available to the applicant that may indicate unsuspected problems. Department engineers review the technical feasibility and adequacy of structural design, plan of construction and method of operation. All professional groups review the economics of the proposal to insure the structure is necessary for prudent development. The total review, as presented to the applicant, may recommend approval or may recommend that the applicant choose another site, modify his design or construction plan or request additional data supporting the need for the structure. Attached are the details on how we handle OCS lease sales which eventually lead to a permit application. Also provided is a discussion of our views on the geologic considerations which will influence the selection of a site for a deepwater port.

Question 9. Supply a detailed and comprehensive response for the record to Mr. Studds' question on page 56 of the transcript pertaining to landward-side of deepwater ports.

Answer. We recognize that one of the environmental problems associated with deepwater ports is the landward development. A general discussion of this is found in the Environmental Impact Statement on p.p. .

A more detailed discussion can only be related to specific sites. Where the deepwater port is to serve existing refineries, e.g., Seadock and Loop, the impact of additional landward development will not be great.

We hope, however, that deepwater ports will be used to serve new refineries. The President has revised the oil import program to spur this development. Attached is a list of proposed refinery construction.

The landward impact of new refineries is a problem that should be addressed primarily in the context of State land use planning. The Administration's proposed Land Use Legislation, and other proposals now in Congress, would provide Federal grants to assist States in developing land use programs. The deepwater port proposal provides that a facility will not be licensed if it is not compatible with the State's land use program. Thus, it encourages States to develop a program to deal with land use problems not only resulting from deepwater ports but from other types of development as well.

ANNOUNCED U.S. REFINERY EXPANSIONS AND NEW PLANTS

Company firm projects	Location	Million barrels per day crude oil	Expansion or new	Investment dollars in millions	Completion date
Exxon	Baytown, Tex	250	Expansion	400	[1] 1976
	Bayway, N.J	100	do		1975
	Baton Rouge, La		do		1975
Socal	Perth Amboy, N.J	75	do	0	1975
	Richmond, Calif	175	do		1975
	El Segundo, Calif	130	do		1975
Navajo Refining	Artesia, N. Mex	6	do	1.2	1974
B.P	Marcus Hook, Pa	50	do		[2] 1975
Arco	Philadelphia, Pa	25	do	17	1974
	Carson, Calif	20	do	5	1973
Pennzoil	Pascagoula, Miss	150/200	New	200	1976
Shell	Paulsboro, N.J	150	do		1977
Hunt	Tuscaloosa, Ala	15	Expansion	13.5	
American Petrofina	Port Arthur, Tex	30	do		
California Oil Purification Co	Ventura, Calif	15	do	10/50	1975
APCO	Arkansas City, Kans	20	do	9.5	1974
Howell	Corpus Christi, Tex	20	do		[3] 1974
Texaco	Convent, La	200	do	300	1977
Mobil	Paulsboro, N.J	150	do		1977
Clark Oil and Refining	Wood River, Ill	45	do		[1] 1974
Hawaiian Industry Refining	Oahu, Hawaii	96	do	15	1976
El Paso Natural Gas	Corpus Christi, Tex	365	New	750	1977
PROJECTS WHICH ARE IN EARLY PLANNING OR ARE UNCERTAIN (HAVE SITES)					
Fuels Desulfurization [4]	Brunswick, Ga	200	do		1976
Pittston [4]	Eastport, Maine	250	do		1976
Hampton Roads Energy Co.[4]	Norfolk, Va	180	do		1976
Pacific Resources	Portland, Oreg	50	do	100	1976

[1] Late.
[2] Second quarter.
[3] First quarter.
[4] Projects which were announced before the President's April 1973 Energy Message.

ANNOUNCED U.S. REFINERY EXPANSIONS AND NEW PLANTS

Company	Location	Million barrels per day crude oil	Expansion or new	Investment dollars in millions	Completion date
Ingram (Northeast Petroleum)	San Francisco Plantation (La.).	200	New	300	1976
Mobil	Joliet, Ill	50/60	Expansion		
Do	Torrance, Calif	25	do		
New England Petroleum [1]	Oswego, N.Y	150	New		1975
Crown Central Petroleum [1]	Morley Creek, Md	100	do		1976
PROJECTS WHICH ARE UNCERTAIN OR IN EARLY PLANNING (NO SITES)					
North American Oil	Alabama	120	do	100/200	1976
Ashland Oil [1]	Near Ashland, Ky	100	do		
Supermarine [1]	Near Paulsboro, N.J	100	do		
Biggs Oil Co	Maine/New Hampshire	100	do		

[1] Projects which were announced before the President's April 1973 Energy Message.

Question 10. On page 65 of the transcript, what remedial action would the Department of the Interior propose to Congress, assuming it was vested with lead agency responsibility under the enacted legislation, and assuming all coastal states opposed siting of deepwater facilities off their shores? Should not some provisions be made in the bill to take care of this eventuality albeit remote?

Answer. If all coastal States opposed siting of deepwater ports off their coasts, the question of whether the national need for energy would justify a Federal preemption of the traditional rights of States to regulate the land and water under their jurisdiction would have to be addressed. In view of the delicacy of this issue and the remoteness of the possibility that all coastal States will oppose deepwater ports off their coasts we do not feel that the issue should be addressed in this legislation.

Question 11. Supply for the record your answers to Congressman Dingell's questions on pages 73 and 74 of the transcript.

Page 73, lines 4 thru 12:

Answer. Where existing legislation, as administered the various Federal agencies, is applicable to the construction operation of a deepwater facility off our shores and beyond the 3 mile limit, the appropriate Federal agencies will continue their administration. Section 104(c) of H.R. 7501 expressly states that the Secretary will not issue a license under this Act until he has been notified by such agencies that the application meets the requirements of the laws which they administer.

Page 73, lines 13 thru 18:

Answer. None of the existing legislation clearly authorizes the issuance of permits (or licenses) for deepwater ports beyond our territorial sea. To remove any question of legal authority, such licensing authority has been requested.

The statutes referred to determine how various agencies govern activities or facilities at ports along our coasts. These same authorities—for the same agencies—will be necessary for deepwater ports. If these ports are to be governed appropriately, the same authorities should apply, and the administrations bill would extend each agency's authority to this effect. and Interior would not issue the license until it gets other agencies' approvals on those portions of the application where they have jurisdiction.

Question 12. On page 77 of the transcript, the Department of the Interior recognized the need for and apparently adopted the position that both the proposed national land use legislation and the existing Coastal Zone Management Act of 1972 shall exist separately and that the Administration, at the insistence of the Department of Commerce, concurred in this position. Is this position consistent with the previously stated administration position in regard to national land use legislation?

Answer. The decision to make the national coastal zone and land use programs separate was made by the Congress. The Departments of Commerce and Interior, as well as the administration as a whole has recognized this since the passage of the Coastal Zone Management Act. When the act was signed, President Nixon stated that he had preferred the enactment of the proposed Land Use Policy and Planning Assistance Act but that the coastal zone measure should become law as a first step towards the implementation of national land use legislation.

At the request of the Department of Commerce and with the specific urging of the Department of the Interior, the administration has asked the Congress to appropriate $5 million for grants to the States under section 305 of the Coastal Zone Management Act, for fiscal year 1974.

The passage of land use legislation will provide essential additional assistance to the States to deal with land use problems and critical areas outside the coastal zone including those land uses, which though located in upland areas, may affect coastal areas. It is clear that the land use policy and planning assistance and the coastal zone legislation should be administered by their respective departments in such a way as to encourage the States to develop a planning and regulation scheme which is consistent with the purposes and requirements of both acts.

[Whereupon, at 12:15 p.m., the committee recessed until 1:30 p.m., of the same day.]

AFTERNOON SESSION

Mr. DOWNING [presiding]. The committee will come to order.

This afternoon we resume hearings on H.R. 5091 and H.R. 5898, the offshore ports and terminal legislation.

We are pleased to have with us this afternoon the Honorable John Norton Moore, Counselor on International Law, U.S. Department of State.

Mr. Moore, it is always a pleasure to have you, and if you will proceed with your statement, we will appreciate it.

STATEMENT OF JOHN NORTON MOORE, COUNSELOR ON INTERNATIONAL LAW, U.S. DEPARTMENT OF STATE; ACCOMPANIED BY RICHARD K. BANKS, OFFICE OF MARITIME AFFAIRS, DEPARTMENT OF STATE, AND STUART FRENCH, DIRECTOR, LAW OF THE SEA TASK FORCE, DEPARTMENT OF DEFENSE

Mr. MOORE. Mr. Chairman and members of the committee, thank you very much.

Though I am testifying on behalf of the Department of State this afternoon, the testimony has been coordinated with the interagency task force on the Law of the Sea.

I am accompanied this afternoon by Mr. Richard Banks, Acting Director of the Office of Maritime Affairs Section of the Department of State, and Mr. Stuart French, the Director of the Law of the Sea Task Force of the Department of Defense, and Mr. Myron Nordquist is in the audience if I need him.

Mr. Chairman, I appreciate the opportunity to appear before this Committee to discuss some of the international law issues raised by the proposed construction and operation of deepwater port facilities. As you are well aware, the subject is a complicated one which touches upon many political, legal, economic, and environmental considerations. Pursuant to the Presidential message on energy, the administration transmitted proposed legislation to the Congress entitled the "Deepwater Port Facilities Act of 1973." The transmittal letter, signed by the Acting Secretary of the Interior, contained a paragraph particularly relevant to the international issues which we will be considering this morning. The paragraph read:

> The construction and operation of proposed deepwater port facilities will not unreasonably interfere with international navigation or other reasonable uses of the high seas. Such construction and operation and regulation of related activities will constitute a reasonable exercise, fully consonant with the principle of freedom of the high seas and will be consistent with international obligations of the United States.

The administration's bill provides, in its first section, that the construction and operation of such facilities by licensed U.S. citizens would be a reasonable use of the high seas in accordance with international law. The bill also states the corollary in that nothing in the act shall be deemed to affect the legal status of the high seas, the superjacent airspace, or the seabed and subsoil, including the Continental Shelf. Other provisions throughout the administration's bill are designed to implement the fundamental approach that the construction and regulation of deepwater port facilities is a reasonable use of the high seas.

The rationale for our position is found in the Convention on the High Seas which represented a codification of existing rules of international law. Article 2 reads:

> The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, inter alia, both for coastal and non-coastal States:
>
> 1. Freedom of navigation;
> 2. Freedom of fishing;
> 3. Freedom to lay submarine cables and pipelines;
> 4. Freedom to fly over the high seas.
>
> These freedoms, and others which are recognized by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of the other States in their exercise of the freedom of the high seas.

Consequently, the freedom to undertake new high seas uses based on general principles would have to be exercised with reasonable regard for other high seas users, and in conformity with the High Seas Convention and any other rules of international law. The question of reasonableness is determined by looking at all relevant factors. It would be necessary, for example, to insure that deepwater port facilities did not unreasonably interfere with the high seas freedom including navigation, fishing, laying submarine cables and pipelines and overflight. In fact, a properly located facility could be said to enhance navigation as it would reduce the chances of vessel collision and pollution of the marine environment in heavily congested coastal areas.

It is essential to keep in mind that the United States could not under the reasonableness approach claim sovereignty to the area in which the deepwater port facility is located. To do so would be a territorial appropriation of a high seas area specifically prohibited by international law. Instead, the United States would be exercising the international legal right to make a permissible use of the high seas. By giving the most careful consideration to relevant international rules and practices on the high seas, the United States could construct and regulate the operation of a deepwater port facility on the high seas. This approach recognizes the vitality of international law and illustrates the wisdom of maintaining the flexible high seas doctrine over as broad an area as possible. Competitors for the same ocean area can be accommodated so long as they reasonably take into account each other's rights and interests.

The cautious and restrained course of action contemplated by the administration should be internationally acceptable. In other words, we do not plan to interfere unduly with the rights of other high seas users in authorizing U.S. citizens to construct deepwater port facilities beyond our territorial sea. We intend to regulate the use of the facility and protect our right to exercise high seas freedoms in a manner fully consistent with accepted maritime practices and general principles of international law.

There is a distinction to be made between foreign flag vessels using the deepwater ports and those merely navigating in the vicinity of such facilities. For the former category another basis for regulation, in addition to protection of the licensing States exercise of its reasonable use rights, is the authority of the licensing State to condition use of the facility on compliance with reasonable regulations, including acceptance of its general jurisdiction for such purposes. In the absence of accepting such conditions, use of the facility could be denied. For the second category—vessels not using the facility—the coastal State would be entitled to take measures necessary to protect its reasonable use of the high seas. Certainly with respect to navigational safety around the deepwater port facility, the most effective way to achieve uniform international rules would be to seek appropriate traffic regulations through IMCO, which has considerable experience and expertise in such matters.

Mr. Chairman, the question of accommodating various uses of ocean space is one of the major tasks of the upcoming Law of the Sea Conference. As you know, the Conference is scheduled to begin this fall with a 2-week organizational session followed by substantive negotiations in Santiago, Chile, in April–May 1974. The United States has continually stressed the need for a compulsory dispute settlement mechanism to resolve conflicting use problems. In addition, item 18 on the list of subjects and issues for the Law of the Sea Conference is entitled "artificial Islands and installations". Consequently, the U.S. delegation will be working towards a codification of the U.S. approach on deepwater port facilities in the comprehensive Law of the Sea treaty, particularly with a view to ensuring safety of navigation in the vicinity of such facilities.

Mr. Chairman, the construction and regulation of deepwater port facilities raises extraordinarily complicated issues of international law. I realize that my discussion this afternoon has dealt with only the broadest parameters of the subject. It is difficult to analyze the issues in the abstract for the international rules and principles vary depending upon the factual situation. For example, regulations governing artificial islands with permanent inhabitants might be substantially different from those which would be acceptable for a single-point monobuoy. In any case, the freedom of the high seas approach is sufficiently flexible to accommodate a variety of new uses of the oceans. The United States must, however, proceed carefully to insure that the interests of other States affected by our actions in selected high seas areas are fully taken into account.

Thank you for the opportunity to discuss some of the international law aspects related to the construction and regulation of deepwater port facilities. This subject is an extremely important one which warrants prompt and thorough attention by the Congress.

Mr. Downing. Thank you, Mr. Moore.

Mr. Moore, you stated that this superport would not have a sovereign status. I am a little in doubt as to what status it does enjoy, sitting out there in international waters.

It would be U.S. owned, of course.

Mr. Moore. Surely.

Mr. Downing. What goes along with that type of ownership?

Mr. Moore. I think the important point is that this would not be an appropriation of sovereignty of the area under Article 2 of the Hign Seas convention.

It would be a facility subject to the jurisdiction of the constructing State, in this case the United States so that with respect to regulation of activities, for example, on the superport or in surrounding areas, they would be subject to reasonable regulations related to what is, in essence, a reasonable use of the high seas.

Mr. DOWNING. Now, you state that this is on the agenda for the Law of the Sea conference and presumably will be discussed then.

Do you think that our going forward with this legislation constitutes unilateral action on the part of the United States?

Mr. MOORE. Mr. Chairman, this is a difficult case, a sensitive issue, and it is one that we need to weigh very carefully with respect to each problem.

There are a number of different problems that I know you are very aware of, with respect to which, under our own interpretation of international law, we are permitted to go ahead and take the action.

One, for example, is the question of mining of seabed manganese nodules as a reasonable high seas freedom.

Second may be the question of extension of straight baselines with respect to the fisheries contiguous zone, a bill upon which I testified before a subcommittee of this committee yesterday.

I think in each case the assessment that must be made with respect to that legislation is the impact in general it would have on the Law of the Sea negotiations; in each case the question of how different it is from past practices, the extent of the practice, the question of whether it, in fact, would be confirming high seas freedoms or possibly confirming unilateral extensions of coastal State jurisdiction.

In all of those situations we try to balance what the impact would be on the Law of the Sea convention, and my assessment is that in this particular case, this is not a controversial measure. This is one that would be broadly supported by all States and it would not prejudge the Law of the Sea conference or be viewed by other States as a provacative measure.

Mr. DOWNING. Now, we are told that there are approximately 100 of these offshore ports scattered around the world.

Have we built up any precedent of law insofar as those existing ports are concerned?

Mr. MOORE. I wish that I could say that we would put it primarily on those over 100 single point monobuoy systems, but our research indicates that those are basically located within the territorial waters or to the extent that some of these facilities are located beyond areas of claimed territorial waters, they are explicitly related to exploration and exploitation of continental shelf resources and would thereby clearly be facilities under article 5(2) of the Continental Shelf convention.

On the other hand, I think there is a very clear legal case for the lawfulness of the construction of the superports beyond the territorial sea.

Article 2 of the High Seas convention makes it very clear that through the use of "intervalia", that the listing is not an exclusive listing of high seas freedom.

In the commentary to article 2 the International Law Commission underlines that the basic theory on which it was proceeding was residual high seas freedoms. Reasonable specific use of the high seas underlines that approach.

There is, in fact, a recent amendment to a 1954 IMCO convention on prevention of pollution of the sea by oil which strongly suggests that the nations of the world hold in mind the possibility of such deepwater port facilities beyond the territorial sea.

That amendment specifies that in case a foreign flag vessel subject to the convention does not comply with the amendment, the coastal State may deny such a tanker access to ports in its territorial waters or to offshore terminals under its control.

That is, in fact, a 1971 amendment which has been submitted to the Senate for ratification and consent of the 1954 convention.

Again, there is substantial evidence that this is accepted today in customary or in treaty international law.

In addition to that, customary international law has supported for years the reasonable use of the high seas other than those enumerated.

For example, the anchoring of flagships over the continental margin, beyond the territorial sea which has been commonplace, might also be viewed as some kind of appropriation, but, in fact, is very similar to a single point monobuoy in terms of the basic principle of the freedom of the high seas.

Lastly, I think it might be pointed out that Article 9 of the convention on the Territorial Sea and the contiguous zone made reference to the possibility of roadsteads located either partly within or completely outside the territorial sea.

Those were areas in which normally loading, unloading, and anchoring of ships would take place, and they would be assimilated into the territorial sea.

We do not believe this is a roadstead. We are not urging that. We are not urging this would be part of the territorial sea of the United States, but we do think that the basic purpose, the thrust behind article 9, also supports the principal basis of jurisdiction here which is reasonable use of the high seas.

Mr. DOWNING. Could a foreign passenger disembark at the superport and walk around without a passport?

Mr. MOORE. That is an interesting question. I would assume that he would be subject completely to the jurisdiction of the United States, and I suspect that we would wish to have normal immigration rules apply there.

I am not sure, frankly, as to whether a passport would be required. It would make sense in that case. The only thing I am sure of is it would be subject to the jurisdiction of the United States and we could certainly require a passport if we wish to.

Mr. DOWNING. Does the prospect of possible cutoffs, by some of these Middle East countries, of oil to the United States concern you?

Mr. MOORE. Yes, it certainly does. I think the question of continuing supply from all sources is one that is of major interest and concern to us, and it is one of the reasons that we are trying, in the law-of-the-sea negotiations, to establish a reasonable regime for stability of investment and for protection of the integrity of investment that will avoid the kind of problems that we have had in investments made on land.

Mr. Downing. Are there any other significant international legal problems that may exist, and if so, do you have any solution for them?

Mr. Moore. Well, I would point out that in the past some of the commentators have, from time to time, indicated that there may be a restriction in international law in construction of such deepwater facilities.

The argument which they use is to refer to article 5, subparagraph 2, of the Continental Shelf Convention.

That article basically indicates that the coastal State may construct on its continental margin facilities that are necessary to the exploration and exploitation of resources arising from its margin.

Their argument is that because there is no mention made of any other purpose that it might be unlawful in international law to have such deepwater port facilities not immediately related to exploitation of Continental Shelf margin resources.

I think that is simply a misconception. It is a misreading of international law and the conventions.

There is nothing exclusive in the Continental Shelf Convention on that. It simply makes it very clear that one particular kind of structure is lawful under that Convention. There is not any kind of negative implication—other kinds of reasonable high seas use would be permitted.

For years we have had light ships anchoring beyond the territorial sea over the margin. So I think the argument is simply a misconception, but I raise it here because it is one that from time to time has been advanced.

I think it should also be made very clear that the doctrine of reasonable use of the high seas carries with it the authority to take measures reasonably related to the operation and use of the facility itself, for example, closely related in surrounding areas.

All of this, like all of law, would be subjected to the highest and most difficult test of all, and that is the reasonableness in context which has to be the test really of all law.

I think it is very clear there is a substantial legal case under international law for that kind of regulation.

One other point I would like to clarify. The bill which the administration has introduced indicates that if a foreign ship uses the deepwater port facility, that the foreign flag vessel is deemed to consent to United States jurisdiction for purposes of use of that facility.

I think that has a very clear basis in international law. It simply is that if you have a port you can require others to meet certain conditions as a condition for use of that port.

There is no question about it.

That is not, however, the sole international legal basis for regulation and use of operation.

The second basis and the primary basis is really a question of reasonable use and making regulations that relate reasonably to the use and protection and operation of that facility.

I think that the best way to make particular kinds of safety regulations will be, in the long run, through the facilities of IMCO which has a great deal of experience in that kind of regulation.

Mr. Downing. Thank you very much, Mr. Moore.

Mr. du Pont?

Mr. du Pont. Thank you, Mr. Chairman.

I apologize for coming in late. Perhaps my first question has already beeen answered in response to questions from the Chairman, but would it be possible for a foreign nation to build a superport 13 miles off our coast?

Mr. Moore. Well, I would like to make clear in answering your question, that that is not the legal issue which we face with respect to this bill, which is concerned with licensing U.S. citizens to build such facilities off our coast.

Mr. du Pont. Well, I understand that, but one alternative for a U.S. citizen who could not get licensed by this bill would be to get licensed by the Government of Saudi Arabia to put one in the same place.

Mr. Moore. I realize that is not your question, but I wanted to make that distinction very clear; that is not the basic issue in this bill.

As a practical matter, I think the problem, though it looks very very real, is for most purposes largely an imaginary horror, and it is because essentially for every purpose that you can think of, there has to be some kind of connection with the coastal State and, in fact, for example, with the deepwater port facility you have to have a pipeline to the shore.

It is very clear that the coastal State in international law has the right to regulate the landing of that pipeline in its territory and even once it gets into the territorial sea. For all practical purposes U.S. citizens could not be constructing these facilities off someone else's coast, and having a pipeline going to the coast without their consent and vice versa.

Another point that I would make under international law is that with respect to interference with the resource exploration and exploitation of the continental margin, we would be talking about somebody else's resource jurisdiction, whether they were building it on our margin or whether we were building on their margin.

There certainly would be a far higher standard for making sure that whatever the construction was that there was no interference with the resource jurisdiction of the coastal State.

Mr. du Pont. Well, now, perhaps this is a little outside your field, but can you define for us exactly how far the jurisdiction of one State goes as opposed to the jurisdiction of the United States?

Mr. Moore. Well, that is, again, an issue at least with respect to continental margin resources that has been the subject of the Outer Continental Shelf Lands Act, the Submerged Lands Act before that, as well as a number of Supreme Court decisions. I think in general, it is basically 3 miles except with respect to Texas and Florida in the gulf where it is three marine leagues, which is approximately 10.5 miles.

Mr. du Pont. So basically, a State just has jurisdiction to the 3-mile limit.

Mr. Moore. That is correct, with respect to continental margin resources.

Mr. du Pont. One final question that is a little bit off the subject we have been on.

The administration has been very strong for development of some kind of offshore facility. At the same time the administration has been opposed to the deep sea bed mineral mining concept. What difference then do you see in the law between those two positions?

Mr. MOORE. Yes.

This is a question that I tried to answer briefly in a general sense, when Congressman Downing asked the question.

I think the starting point is to recognize that in both of those cases, as well as in the situation of the bill I testified on yesterday, and was opposed to, the question of drawing straight baselines for the contiguous fisheries zones, in all three cases, we feel there is an existing right under international law for those particular practices.

The interaction of the law-of-the-sea negotiations with respect to all of this legislation is something, I think, that has to be viewed in the context in which these uses are likely to be widely and generally accepted by the international community of States; which of these in terms of our relations with other negotiators is a new legislative measure which at this time is likely to impede our ability to negotiate a settlement which will be to our own interest.

Which of these confirm additional high seas freedoms as opposed to an extension which suggests unilateral action increasing coastal State jurisdiction?

It really is a question of looking at all factors in each particular case. We are looking closely at the other situations.

In this case, I am reasonably confident that there will not be adverse consequences in the law-of-the-sea negotiations that would prejudice the U.S. interest in superport construction.

Mr. DU PONT. Thank you.

Mr. DOWNING. Mr. Breaux?

Mr. BREAUX. Thank you, Mr. Chairman.

Thank you, Mr. Moore, for your testimony.

Regarding the question of jurisdiction, I am interested in who would obtain jurisdiction, for instance, in the case of an oil spill that occurred in or around the superport.

Mr. MOORE. I think the regulating power of the deepwater port, the regulating State, which under this bill would be the United States, certainly would have jurisdiction to deal with an oil spill resulting from the operation of the deepwater facility.

In addition, I think the normal international legal rule would apply, that if at any point a State through an activity under its control, causes damage to another State which would be unreasonable, which would violate international law, then, of course, there would be an opportunity and obligation to make compensation to the other State.

It is simply the classic principle of the *Trail-Smelter* case, the arbitration between the United States and Canada.

Mr. BREAUX. Would it make a difference if the spill occurred before the ship was docked so the deepwater port docking facility——

Mr. MOORE. I can imagine some close cases.

I think, in general, if it were anything associated at all with the use of the deepwater port itself, that the coastal State would clearly have jurisdiction to deal with that.

If it were something that really had nothing to do with the deepwater port facility, was simply a passing vessel that had some kind of an oil spill, then it might be a close case as to whether there would be prescriptive competence or whether normal IMCO rules for vessel source pollution would apply.

Mr. BREAUX. Getting away from the issue of oil spills, what about ordinary cases that arise on this type of facility in the Gulf Coast States, for instance, as far as accidents are concerned; accidents that happen when men are working on the facility itself, or, for example cases concerning criminal laws and civil laws?

Would U.S. law apply? Would adjoining individual State laws apply or have you considered that particular question?

Mr. MOORE. Certainly, with respect to U.S. law applying, versus the law of some other nation, U.S. law would apply.

There are a number of different things as basis for that. One is the certainty that if we were regulating our citizens we have jurisdiction under international law to regulate their activities.

Secondly, we can regulate the activities that occur on this structure which is our property.

It is really for those purposes I think, so closely similar to a flagship or similar to a lighthouse, that would be built on submerged rocks beyond your territorial sea.

In addition to that, to the extent that we require the vessels flying other flags to consent to the jurisdiction of the United States as a condition for using the port, there would be no question but that those using the port would be subject to U.S. law.

Finally, with respect to activities that impinged upon and measures that were taken by the coastal State that were reasonably necessary to protect the operation of the deepwater port facility, I think you would not need consent by some other State. Your laws would, in fact, apply.

As to the question of State-Federal relations, I frankly have not studied that issue and I am not certain what the answer under the act in that case would be.

Mr. BREAUX. It might be that that point could be addressed later. It is of some concern to officials in the gulf coast area, which individual State laws would apply to accidents or anything else applicable to the deepwater port itself?

Mr. MOORE. Section 111 provides that the constitution and the laws and treaties of the United States shall apply to the deepwater port facilities licensed under the act.

There is an additional provision here. To the extent that they are applicable and not inconsistent with the act or with the other Federal laws and regulations now in effect or hereafter adopted, the civil and criminal laws of the nearest State are declared to be the law of the United States for such facility.

It is again, basically, the laws of the nearest coastal State subject to, in essence, preemption by inconsistent Federal provisions.

Mr. BREAUX. One final question.

Someone made a point to the effect that other deepwater ports have subjected their national laws to all users of those port facilities.

Is that not what you are saying, that we should be consistent and do the same thing?

Mr. Moore. Yes; I would say that we would expect our laws would apply to all persons using the deepwater port facility.

Mr. Breaux. But is not the distinction being on all these other deepwater ports, that are presently located in territorial waters off a country, whereas this will be in the Outer Continental Shelf area?

Mr. Moore. Well, this would be off the coast of the United States beyond the territorial sea.

Mr. Breaux. That is right.

Mr. Moore. That is the distinction physically as to where they are located.

I think the legal basis for the application of your laws, even beyond the territorial sea, to this kind of structure, as long as it is reasonably located in a manner that takes account of other interests and use of the high seas would be perfectly consistent.

I would like to emphasize that the bill in a number of places, as has been submitted by the administration, does make it very clear that one of the points that will be taken into account in issuing licenses is going to be the consistency with the United States international obligations in making sure that this facility remains a reasonable use which reasonably accommodates the interest of all States in freedom of the high seas.

Mr. Breaux. Thank you.

Thank you, Mr. Chairman.

Mr. Downing. Madam Chairman, do you have any questions?

The Chairman. At this point, no.

Mr. Downing. Mr. Snyder?

Mr. Snyder. Just one or two.

The witness this morning indicated there were about 100 of these deepwater ports around the world.

Do you know how many are located in what we refer to as international waters?

Mr. Moore. The figures that I have are very rough on this but my understanding is that approximately some 40 of those are not located in the claimed territorial seas of the States which have constructed them.

Of these 40 or so, again my understanding is that all of those are facilities that are related to exploration and exploitation of Continetal margin resources so they could come under article 5, subparagraph 2, of the Continental Shelf Convention.

But again, we think there is a very sound, adequate legal basis quite apart from article 5(2) of the Convention.

Mr. Snyder. Do you know of any that do not have connected with them any exploration?

Mr. Moore. Beyond the claimed territorial sea? I do not, at this point.

Mr. Snyder. So that there are no examples of resolved situations insofar as specifically what we are talking about in this legislation or in the administration's bill.

Mr. Moore. With respect to the single point monobuoys or other deepwater port facilities not related to exploration or exploitation, right?

I know of none.

I think there are a number of other analogies in international law that are very close, and certainly make the point of reasonable use of the high seas.

Mr. SNYDER. Would you furnish a list of those analogies, or some of them, that might be helpful to us?

Mr. MOORE. Surely.

[The information follows:]

ANALOGIES OF USE OF THE HIGH SEAS

Although there are no direct precedents for the construction of deepwater port facilities such as are contemplated in the present legislation, examples of reasonable uses of the high seas may be found in the many navigational aids utilized by coastal nations. The United States, for instance, has long employed not only buoys and beacons but also larger installations such as light ships for navigational purposes. These structures—in effect floating lighthouses—are erected in areas where it would be impracticable to construct regular lighthouses. Averaging about 120 feet in length, the ships are anchored in fixed positions and carry radio beacons and foghorns. Since the beginning of this century the light ships have been located both within and outside the territorial sea. Like other aids to navigation, they have traditionally been regarded as falling under the jurisdiction and control of the country deploying and maintaining them.

Another analogy is the use of the high seas for scientific research. Ocean data acquisition systems (ODAS) at present range in complexity from simple drift bottles to so-called "monster buoys," collections of instruments mounted on a base which can be as large as a destroyer. In recent years a number of states have begun to utilize increasingly sophisticated systems, and with this use have arisen problems relating to theft, collision, and liability. Aided by the Intergovernmental Maritime Consultative Organization, a group of international legal experts established by the Intergovernmental Oceanographic Commission of UNESCO submitted a draft convention in 1970 aimed at clarifying the legal status of the ODAS. It is not anticipated that the plenipotentiary conference on this convention will be held before the substantive session of the Law of the Sea Conference scheduled for Santiago during April/May of 1974. Nonetheless, draft articles of the convention make clear that a "reasonable use" type justification is envisioned for the ODAS. Proposed articles would give all states the right to deploy or authorize the deployment of ODAS in the high seas by persons subject to its jurisdiction, and further provide that this right of deployment will be exercised with reasonable regard for the interests of other users of the seas.

A more remote analogy to reasonable use may be found in the Guano Islands legislation passed by Congress in 1856. Under this act the President, at his discretion and upon the fulfillment of certain statutory conditions, could declare islands, rocks, or keys which were not within the jurisdiction of any other government to appertain to the U.S. This meant that the U.S. possessed no sovereign or territorial rights but merely protected its citizens in the prosecution of their enterprise—the appropriation and disposal of guana. In *Duncan* v. *Navassa Phosphate Company* (137 U.S. 647) the Supreme Court of the United States said: "The whole right conferred upon the discoverer and his assigns is a license to occupy the island for the purpose of removing (the) guano."

One final analogy is provided by roadstead. These are natural loading and unloading points for ships, ordinarily located somewhat closer to shore than deepwater port facilities but often sited beyond the territorial sea. Under Article 9 of the 1958 Geneva Convention on the Territorial Sea and Contiguous Zone, roadsteads are viewed as part of the coastal state's territorial waters. As indicated by our earlier testimony, we have chosen *not* to attempt to justify the construction of deepwater ports under the reasoning applicable to roadsteads. However, roadsteads do provide an example of widely-utilized structures which may be located outside the territorial sea and yet are deemed by international law to be under control of the coastal state.

Mr. SNYDER. There is, as you know, a dispute going on about who wants these and who does not want them off their coast. H.R. 2020 and related bills would, in effect, give the States the veto right on these. Does your knowledge of this indicate to you any fixed opinion as to whether or not there is any legal basis for giving these States a veto right beyond the States territorial waters?

Mr. MOORE. There is certainly nothing inconsistent with international law if the United States decided internally after it is decided to have such a facility, to, in a variety of ways, take into account the interest of the State.

Mr. SNYDER. You say take into account, but now if the law we are talking about, the domestic law of the United States, were to be enacted, that gave a state a veto power, would not then the United States itself be unilaterally giving a right to a local jurisdiction that they would have to have some arrangement with other countries with, before they could do that?

Mr. MOORE. No, I would think not.

I would see no inconsistency at all under international law once the United States has power to take particular action to delegate that power to one of the states.

I would see a problem under the converse of that in which a State claimed exclusive right to make decisions to build such superports free of Federal regulation.

I think that could conceivably involve us in speaking with more than one voice to the Nation.

I think that is not the case on the basic structure of the act; it is Federal regulation which then delegates particular power, let us say, for the State to say they do not wish a facility beyond the territorial sea.

Mr. SNYDER. In other words, within our international relations you are saying that it is legally possible under international law to delegate to some local government the right to say yes or no on matters that might involve other countries.

Mr. MOORE. Well, to delegate the power to veto the construction to the local State, yes. I think there is absolutely no problem under international law to do that. If there were a network of conventions that came into force at a later date, that made conflicting obligations and the States wished to take affirmative action that would violate those, we might have a different case, but there is nothing like that at all in this situation.

Mr. SNYDER. I am sorry I was not here earlier, but I was tied up in another meeting and you might have dealt with this.

Is this matter going to be dealt with at the Law of the Sea Conference?

Mr. MOORE. Yes. Agenda item 18 deals with artificial structures beyond the territorial sea, so it will be one of the items on the agenda of the Law of the Sea Conference, and I would anticipate that the final convention is likely to deal with this subject in some form.

Mr. SNYDER. Have you discussed that earlier in your testimony?

Mr. MOORE. Only to mention it is on the agenda.

Mr. SNYDER. Then just pursuing that a little bit in connection with these other questions I am asking you about. Would you anticipate that if some resolution is met at the Law of the Sea Conference, the situation might change in regard to your answer as to whether or not a coastal State could have an overriding veto.

Mr. MOORE. No. At this point the question of State-Federal relations, delegating to the States the authority to say no, we do not wish such facility off our coast, there is no international legal implication.

The Federal Government can do that.

I would not anticipate any shift in that in the Law of the Sea Conference.

I would like to emphasize that this is not saying the converse. We are not saying that we have a situation here in which the States are individually free to regulate without a basic Federal structure in an unrestrained fashion, any kind of structure beyond the territorial sea.

I think that should be subject to a Federal uniform approach as is contained in this act.

Mr. SNYDER. Thank you.

Mr. DOWNING. Counsel has a question.

Mr. HEYWARD. Mr. Moore, I would be much more comfortable with your reasoning if you did not bring in article II of the convention.

As I read article II of the Convention on the High Seas, it is more a prohibitory article than a permissive article.

In other words, it tells what you cannot interfere with, but I see nothing in there which affirmatively states that any nation has the right to use the seas in any way that is considered reasonable.

I think you are reaching that by reversing the fact that it prohibits interference with certain specified freedoms.

Now, in that connection, are you familiar with any of the other freedoms which were discussed in Geneva in 1958, which could not be generally agreed upon, and therefore were thrown into the pot as inter alia in the convention?

Mr. MOORE. Yes, I am. I would say initially that as I read article II, I think it says a number of things.

One is it does make very clear that no state can validly purport to subject any part of the high seas to its sovereignty. That is an important point.

I think the article also is very important in basically preserving residual high seas freedoms. It lists four such freedoms and then says very clearly "inter alia" which was meant by the draftsmen of this convention to indicate that the list is not exhaustive, that there are other high seas freedoms.

My understanding is that one other freedom that was discussed was the question, for example, of the possible exploration and exploitation of mineral deposits beyond areas of [national] jurisdiction. That certainly is not something that is on this list.

There is nothing that was very clearly determined as to precisely what inter alia meant, but I think the principle is very clear and was laid down also in [the background comments,] the legislative history of this provision in the work of the International Law Commission.

I would also say that it is not simply a question of states in their unilateral competence [of] reserving the right to make these determinations. They are determinations that would be subject to the normal dispute settlement procedures between nations. We are urging as part of the law of the sea settlement that there be compulsory disputes settlement to adjust competing ocean usage.

Mr. Heyward. You mentioned one that you probably would include under inter alia, but article 2 refers to these freedoms and others which are recognized by the general principles of international law. Is the right to build structures offshore beyond territorial limits, one which you would say is recognized by the general principles of international law.

Mr. Moore. Yes, I think that it is. They have for many years.

Mr. Heyward. Could we not then base our operations on a theory that this is a reasonable use of the high seas which is not prohibited by international law?

Mr. Moore. Precisely; in fact, that is the case, and that summarizes it very well.

Mr. Heyward. If that is so, why does that reasonable use not extend to foreign governments off our shores, and are we not missing the point if we do not in some manner in legislation prohibit the construction of structures offshore by any persons other than those which are issued permits by the United States based on the theory that this could be an interference with another recognized right in international law, the right to utilize the resources of our Continental Shelf?

Mr. Moore. I think the answer is that the problem is not a real problem as far as deepwater port facilities are concerned.

Mr. Heyward. You mentioned the pipeline, but I would like to point out that it may be important for this to be done for purposes other than deepwater ports. Furthermore, deepwater terminals could be utilized as the basis for transfer to other ships to come into our ports, and we would not have the permit pipeline "handle" that you cited to Mr. du Pont.

Mr. Moore. You are right, it goes beyond simply deepwater port facilities. For example, to facilities such as power generating stations.

In almost every case there has to be some kind of a relation to the coastal State. Even the oil transfer point is located at a particular point, because you would like to have oil transfer for the purpose of going to the coastal State.

Even in that case we could prohibit the use of our port facilities by vessels that had used the deepwater port facility.

The other requirements in international law that I would like to point out are that with respect to structures that interefere in any way with continental margin resources, there would be a far higher standard of justification and with respect to whether there is, in fact, an interference with your resource jurisdiction, by some other state that is planning a structure.

If you are talking about your own resource jurisdiction, of course there is no such interference, which is what we are talking about in this bill.

Mr. Heyward. I am suggesting that legislation to prohibit foreign activities of any kind on our shelf might be bottomed on the rights of the United States to its Continental Shelf resources, and therefore we could prohibit any structure by a foreign source on our Continental Shelf on the theory that it interferes with that right which is recognized.

Mr. MOORE. We could certainly prohibit any structure related to exploration or exploitation.

Mr. HEYWARD. Do you think we would not have the right to prohibit other types of structures?

Mr. MOORE. I think it really is a continental problem and that I really need to know all the factors of the surrounding circumstances.

I think in almost any conceivable case that involves any kind of commercial interest, we would have a number of different ways of prohibiting such construction, without the consent of the United States.

Mr. HEYWARD. What is to prevent it, unless we, in providing for permits to construct facilities on the shelf, assert in the legislation our right to prohibit any type of construction activity by foreigners, including, if I might say so, a gambling casino 4 miles offshore in an area which is not necessarily involved in either coral or shellfishing or anything else?

Mr. MOORE. We certainly would have jurisdiction to prohibit a gambling casino 4 miles offshore because it would be in our contiguous zone. It would also interfere with our exclusive resource jurisdiction over the continental margin resources and I think that would provide a handle to regulate it to the extent that it does, in fact, unreasonably interfere with those resources.

Mr. HEYWARD. I have one other point that I would clear up.

In connection with foreign vessels that may be utilizing these facilities, you analogize somewhat to the utilization of our own ports, and I would point out that I do not think that is a good analogy, because we have territorial jurisdiction there.

I read in article 6 of the High Seas Convention that ships shall sail under the flag of one state only and, save in exceptional cases explicitly provided for in international treaties or in these articles, shall be subject to its exclusive jurisdiction on the high seas, "its" meaning the flag of the state.

Do you think that a foreign vessel could, without the permission of its flag state, subject itself, as a condition of utilization of these facilities, to any of the regulatory matters or any of the civil or criminal laws which the United States wanted to apply to those facilities?

Mr. MOORE. I think unequivocably, yes.

Mr. HEYWARD. You do not think it would be desirable internationally to attempt to reach bilateral agreements in this area?

Mr. MOORE. Let me try to answer the first question first, and then come back to the bilateral.

There are two bases of jurisdiction of the flag state vessel using the deepwater port facility.

The first would be, by analogy, consent by its using the facility conditioned upon the United States saying you must accept our jurisdiction. That is an analogy that I get from IMCO. It is the 1971 Convention to the 1954 IMCO Convention on the prevention of pollution of the sea by oil that draws that analogy.

Mr. HEYWARD. I beg your pardon. Analogy to what?

Mr. MOORE. The analogy to conditioning use of your ports, which are located within your territorial sea, and imposing certain conditions of use of offshore port facilities that are not located within the territorial sea.

Mr. HEYWARD. I would like to point out that the provision of those amendments merely recognizes there are offshore ports, some of which are already outside of territorial waters, but which you specify, and I agree with you, are probably all related to exploitation. These would have to be included within this IMCO amendment.

In view of the fact that it is not yet ratified, I don't believe we can use this as existing international law.

I would suggest that those offshore ports they are talking about in those amendments on the construction or design of tankers, and the prohibition from using offshore ports and terminals probably relates to those that are presently accessible as exploitation terminals.

Mr. MOORE. I think there are the different kinds of facilities, some dealing with exploration. The language of the IMCO amendment does not limit itself solely to those used for exploration on the Continental Shelf.

The second basis of jurisdiction, it seems to me, is reasonable use. It is not dependent on the analogy of the flag state subjecting itself to consent. If it is, in fact, a reasonable use of the high seas to build these facilities as we feel it is, it also carries along with it a reasonable jurisdiction for purposes of controlling the activities, of protecting the facility itself, so that I think that there is a basis for subjecting foreign-flag vessels, with or without their consent, to the jurisdiction of the coastal State building these particular facilities when they choose to use those facilities.

With respect to bilaterals, I think it is entirely possible that some problems may arise in the future.

It is a very difficult problem of the interrelationship of flag state law and coastal State law, and the use of the facilities; and if those problems do arise, then we would certainly give careful consideration to the use of bilaterals to resolve them or possibly to a multilateral solution to resolve them.

Mr. HEYWARD. One final question. In the administration's proposal as to conditions of licenses it authorizes the Secretary of Interior to include in those conditions such measures as the Secretary may prescribe to meet U.S. international obligations.

What are they talking about there?

Mr. MOORE. That is largely a precautionary provision because we wish to make it abundantly clear that these provisions would be constructed with a reasonable use by others of the high seas in mind.

Mr. HEYWARD. Safety of navigation?

Mr. MOORE. Yes. That may be one of those as well as the interest in continued fishing in areas of very important fish banks, for example. Those questions of the reasonable use of other nations would be taken into account in the determination to issue a license.

Mr. Heyward. There is nothing here in connection with national security. Is there any provision in the bill that I have overlooked?

Mr. Moore. Yes, there is a provision.

Mr. Heyward. Does it require consultation with the Secretary of Defense on security problems?

Mr. Moore. There is a provision in the bill relating to national security aspects of the construction of such facilities. It is section 103(h) which provides that the Secretary shall not issue a license hereunder in any case where the President determines that it would be contrary to the national security of the United States.

I would assume that that would, in those cases, include the concurrence of the Secretary of Defense.

Mr. Heyward. Thank you.

Mr. Downing. Minority counsel have a question?

Mr. Rountree. Very quickly, and following up on Pete Heyward's question pertaining to the consent or implied consent principle as provided in the administration's version. Normally, as I understand it, this principle is premised on the jurisdictional base of nationality or territoriality.

In this case we have neither of these. Consequently, I would appreciate it if you would submit for the record a more detailed response as to the rationale behind the position taken in the legislation in this regard.

Exactly how will the Department of State internally and procedurally propose to assist in the administration of any legislation that will be omitted. How much will it cost?

Mr. Moore. Surely, the first question really is the basis for the implied consent theory, and I would like first to narrow exactly what it is that the implied consent theory is used for in this bill.

There are a number of different basic legal issues. One is your authority to make reasonable regulations for the use and operation.

The implied consent theory is used only with respect to the second of those issues.

With respect to that issue, I think the principal basis for jurisdiction is not implied consent but, in fact, reasonable use of the high seas precisely as it is for the construction issue.

A second basis of consent, however, is that the State owning the facility, constructing the facility, has the right to condition use of that facility on acceptance of its jurisdiction and certain reasonable conditions that may apply.

This stems basically from the ownership of the item itself. I think there is an analogy here to the use of your port facilities by ships of other nations.

It is not questioned under international law that a port State can set higher ship construction standards, for example, as we have done or contemplate doing under our Ports and Waterways Safety Act.

Mr. Rountree. Has the United States prepared a formal position paper on deepwater ports in preparation of the Law of the Sea Conference, or is the U.S. position embodied in the context of the demonstration bill, HR 7501?

Mr. MOORE. We have studied the question carefully both with respect to the administration's legislation and in preparation for the Law of the Sea Conference.

We have under study the question of whether it would be useful to have additional draft articles dealing with the question of deepwater port facilities and other artificial structures as we do with the other items on the list of issues for the conference.

Mr. ROUNTREE. In section 114 of the administration's bill it requires the Secretary of State to seek appropriate international agreements regarding navigation in the vicinity of deepwater port facilities.

Is this in the context of the Law of the Sea or IMCO?

Mr. MOORE. It might well be in both contexts.

IMCO has a great deal of background and experience, and I think that in any kind of detailed regulation on the safety regulations concerned with the operation of these ports, it would be far preferable to have international agreement through IMCO.

With respect to the basic jurisdictional issues, many of which we have been talking about today, it is quite possible that LOS will deal with that.

Mr. ROUNTREE. I have two more questions.

There are a great number of other international conventions which could conceivably be impacted by or on this proposed legislation authorizing the construction and operation of deepwater ports.

We were supplied a partial listing of that in the context of the committee's consideration of the maritime authorization bill by the Office of Maritime Affairs, Department of State.

For the record, I would appreciate it if the Department of State would analyze each of these conventions and provide the committee with exactly how it will be impacted on, and will we require other amendments to existing and future international conventions currently under negotiations, et cetera.

I think you got the gist of that.

Mr. MOORE. Yes.

[The information follows:]

INTERNATIONAL CONVENTIONS AFFECTED BY H.R. 5091 AND H.R. 5898

I. CONVENTION ON THE TERRITORIAL SEA AND CONTIGUOUS ZONE; CONVENTION ON THE CONTINENTAL SHELF; CONVENTION ON THE HIGH SEAS

These 1958 Geneva Conventions constitute the basic sources of international law for the ocean. While none of the conventions addresses itself specifically to deepwater ports, certain sections of them are pertinent in evaluating the impact of the proposed bills. The analysis here has been broken down on basis of location of the ports.

A. Deepwater Ports Constructed Within the Territorial Sea

Deep water ports located in the territorial sea would appear to pose few problems in international law. Article 2 of the Convention on the Territorial Sea and Contiguous Zone provides that a coastal state has sovereignty over the territorial sea as well as its bed and subsoil, subject to the right of innocent passage for ships of all states as reserved under Article 14. It therefore would not be necessary for the United States to obtain the consent of a foreign country prior to authorizing the construction of a deepwater port within our territorial sea. As a practical matter, this is unlikely to be a problem if construction does not affect normal shipping lanes. Nonetheless, we would want to give others appropriate notice of the port's location, for another country could object to such a port if it felt its right of innocent passage or other rights under international law were jeopardized.

No basic amendments of the Convention would appear necessary for deepwater ports located wholly within the territorial sea.

B. Deepwater Ports Constructed Outside the Territorial Sea

Under international law the high seas encompass all areas beyond the territorial sea. Article 2 of the Convention on the High Seas provides:

"The high seas being open to all nations, no State may validly purport to subject any part of them to its sovereignty. Freedom of the high seas is exercised under the conditions laid down by these articles and by the other rules of international law. It comprises, *inter alia*, both for coastal and non-coastal States:

1. Freedom of navigation;
2. Freedom of fishing;
3. Freedom to lay submarine cables and pipelines;
4. Freedom to fly over the high seas.

"These freedoms, and other which are recognized by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the freedom of the high heas."

As is seen from Article 2, construction of a deepwater port would have to be based on "other rules of international law" or "general principles of international law." While there are no applicable rules, there may be principles; the United States could logically take the position that a port is justifiable under "general principles of international law" as a reasonable use of the high seas. Clearly, the freedom to undertake new high seas uses based on such "general principles would have to be exercised with reasonable regard for other high seas users.

A more specific legal justification for the construction of deepwater ports, and indeed for many types of offshore structures, is obviously desirable. The opportunity to discuss expansion and delineation of international law in this areas will be provided by the upcoming comprehensive Conference on the Law of the Sea. From the Conference may emerge significant amendments of the High Seas Convention or perhaps an entirely new convention dealing with offshore installations.

1. *The Contiguous Zone.*—Article 24 of the Convention on the Territorial Sea and the Contiguous Zone provides that within the contiguous zone a "coastal State may exercise the control necessary to:

a. Prevent infringement of its customs, fiscal, immigration, or sanitary regulations within its territory or territorial sea;

b. Punish infringement of the above regulations committed within its territory or territorial sea."

The Convention further provides that such a zone may not extend beyond 12 miles from the baseline from which the breadth of the territorial sea is measured. Pursuant to this authority, the United States recognizes a nine-mile contiguous zone adjacent to its three-mile territorial sea.

While the contiguous zone is still a region of the high seas except for freedom of fishing, it is apparent that the jurisdiction which the coastal State could exercise over a deepwater port in the contiguous zone would be greater than that which it could exercise in the high seas but less than that which it could exercise in the territorial sea. However, the additional controls over activities within the contiguous zone do not by themselves appear sufficient to justify a coastal State in building and regulating deepwater ports within the contiguous zone. Adequate justification for ports in the area would therefore appear to require justification under another Convention or principle of international law, by amendment of the Convention, or, as may result from the 1974 Conference on Law of the Sea, by entirely new international conventions relating to such offshore structures.

2. *The Continental Shelf.*—Under Article 2 of the Convention on the Continental Shelf, a coastal State exercises sovereign rights for the purpose of exploring the continental shelf and exploiting its natural resources. Article 3 of the same Convention provides that the rights of the coastal State over the continental shelf do not affect the legal status of the superjacent waters as high seas.

As the deepwater port facilities do not bear close relation to either exploration of the continental shelf or exploitation of its natural resources, they do not appear directly to affect or be affected by this Convention. Moreover, the United States and almost all other states have consistently interpreted the Continental Shelf Convention as restricting the exclusive jurisdiction of coastal States to resource purposes and to other express grants of jurisdiction in the Convention, such as those regarding scientific research. A more expansive interpretation of the Convention would prejudice our long-standing position on this issue and encourage jurisdictional claims by other states which would adversely affect other uses of the continental shelf. Again, the 1974 Law of the Sea Conference may result in amendment of this Convention or in the formulation of entirely new principles regarding location of superports and other structures over the continental shelf.

II. SAFETY AND SHIPPING CONVENTIONS

A. Safety of Life at Sea Convention (1960) (SOLAS)

This Convention serves to standardize construction, equipment, and operational standards relating to such matters as subdivision and stability, machinery and electrical installations, fire protection, life-saving appliances, radiotelegraphy, and radiotelephony. Contracting governments issue various certificates to ships of their registry attesting to the ships' compliance with their national standards. All parties to the Convention are required to adopt certain international standards. The other contracting governments exercise the control necessary to assure that vessels in their ports have a valid certificate in force. If there are clear grounds for beliving that the condition of the ship or its equipment does not correspond with the particulars of the certificates, or if there is no valid certificate on board, the ship may be detained until steps are taken to provide for the safety of the crew and passengers.

Since the control authority of the state in whose port the vessel is located is based upon its plenary authority (i.e., territorial jurisdiction) in port areas, it would appear that the SOLAS control mechanism is not directly applicable to superports. Amendment to the Convention would probably be necessary to ensure adequate coverage.

B. International Convention on Load Lines (1966)

This Convention, which is soon to be implemented by legislation, provides a "SOLAS-like" form of control mechanism. The government in whose port the ship is located verifies the presence of a valid Load Line Certificate (issued by its state of registry) on board. However, further control by the state in whose port the ship is located is authorized under the Convention in that the draft to which the ship is loaded, the position of the load line of the ship, and the presence of material alterations to the ship may be checked against the particulars of the certificate. If there is no valid certificate aboard the ship or its condition does not coincide with that described in the certificate, it may be detained until authorities are convinced that it can proceed to sea without danger to its passengers and crew.

For the same reasons indicated above with regard to SOLAS, operation of the control mechanism in superports would probably require an amendment to the Convention.

C. International Regulations for Preventing Collisions at Sea

These multilaterally adopted voluntary rules of the road would apply to the superport area. However, Rule 1(c) provides for the operation of special rules in certain instances:

> Nothing in these Rules shall prevent the operation of special Rules, made by an appropriate national or local authority for harbors, rivers, lakes or inland waterways connected with the high seas and navigable by seagoing vessels. All possible measures shall however, be taken to avoid conflict with the International Regulations for Preventing Collisions at Sea.

An amendment proposed by the Netherlands would add the term "roadsteads or harbors" between the words "for" and "harbors". The addition would enable a Coastal State to establish particularized rules for application in sea areas extending from harbor entrances. If the amendment were adopted, it could provide a possible basis for particularizing the rules of the road for the superport area. A further amendment of Rule 1(c) to specifically include superports would be the surest way to permit adoption of special rules for the superport area.

III. ENVIRONMENTAL REGULATIONS

A. International Convention for the Prevention of Pollution of the Sea by Oil, as amended

This Convention and its amendments establish certain rights and obligations directed toward the reduction of intentional and non-intentional discharges of oil into the sea. With respect to superport concerns, three elements of the Convention and its amendments should be discussed. Article VIII of the Convention directs that reception facilities for residues and oily mixtures be provided at "oil loading terminals". In ratifying the Convention the United States made the following reservation to this Article:

". . . while it [the United States] will urge port authorities, oil terminals or private contractors to provide adequate disposal facilities, the United States shall not be obliged to construct, operate, or maintain shore facilities at places on U.S. coasts or waters when such facilities may be deemed inadequate, or to assume any financial obligation to assist in such activities." 12 U.S.T. 3024.

Mr. ROUNTREE. That was the last one.

Article VIII, under a liberal construction of the term "oil loading terminal", would appear to be applicable to superports. Nonetheless, as the result of the reservation, the United States would not be required to provide for reception facilities. However, a requirement for such facilities as a condition for the superport license would ensure compliance with the spirit of this Article.

Article IX of the Convention requires the maintenance of an oil record book to record entries of the transfer and discharge of oil, ballast, and residue. Paragraph 5 of this Article provides for the inspection in a port of a contracting government of the oil record book aboard a ship subject to the Convention. This authority would probably not be applicable to a superport unless the Convention were amended.

The third provision of interest here is the 1971 amendment to the Convention. This amendment would add a new Article VI bis which in effect would impose certain construction standards on tankers subject to the Convention. After consultations with the government involved, contracting parties may deny access to ports or offshore terminals to any such tankers which do not comply with these standards. This provision would clearly apply to superports.

B. International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (1969)

This Convention would authorize signatory states to take necessary measures on the high seas "to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences." The Convention also details the procedural and substantive constraints imposed on states taking such measures. A superport would appear to fall within a reasonable interpretation of the term "related interests." Accordingly it would appear that the Convention will apply to superports when it comes into effect.

C. International Convention on Civil Liability for Oil Pollution Damage (1969)

This Convention establishes liability for pollution damage, limitations on such liability, and the manner by which compensation may be made for the damage caused. However, the Convention applies "exclusively to pollution damage caused on the territory excluding the territorial sea of a Contracting State." Since the superport area would not be considered a part of the territorial sea, the Convention in its present form would not apply to pollution damage to the superport. Accordingly, this Convention should be amended to provide for its application to superports.

D. Convention on the Establishment of an International Fund For Compensation For Oil Pollution Damage (1971)

This Convention would establish an international fund supported by contributions from oil receivers to provide supplementary compensation to oil pollution victims beyond that of the Civil Liability Convention and up to a maximum of $32.4 million. Its jurisdictional coverage is identical to that of the Civil Liability Convention.

Mr. DOWNING. Any further questions of the witness?

Mr. ROUNTREE. That was the last one.

Mr. DOWNING. Thank you very much, Mr. Moore, and I know we all wish you great success at the Seabed Committee meeting in Geneva this summer.

Mr. MOORE. Mr. Chairman, it is again a pleasure and I particularly look forward to having you as a member of our delegation this summer.

Mr. DOWNING. I have requested the staff to submit additional questions for response in the record. If you will reply as soon as possible in answer to these questions.

Mr. MOORE. I will be happy to do that, Mr. Chairman.

[The questions follow:]

Question 1.—Indicate what the United States position is on various proposals of foreign nations in the UN Seabed Committee that construction and operation of deepwater ports on the high seas should be regulated under an international entity as opposed to regulation by the coastal state.

Response. The United States has not commented on any proposals of other nations before the United Nations Seabed Committee concerning deepwater port facilities. However, the United States position in the negotiations is clearly embodied in draft treaty articles on the Coastal Seabed Economic Area introduced on July 18, 1973. Article 1(3)(a) in the draft provides that the coastal States shall have the exclusive right to authorize and regulate in the Coastal Seabed Economic area or the superjacent waters the construction, operation and use of offshore installations affecting its economic interests. Article 1(4) provides for reasonable safety zones around such offshore installations. Article 1(5)(a) defines the term "installation" and Article 1(5)(b) states that such installations do not possess the status of islands. Article 3(2) requires States to comply with international standards regarding the breadth of safety zones and navigation in the vicinity but outside the safety zones around offshore installations. A copy of the draft articles and accompanying statement on the Coastal Seabed Economic Area is enclosed.

Question 2. What United States resources and interests could be damaged by an oil spill in the vicinity of deepwater ports located on the high seas which would require compensation to the United States or would permit the United States to require the party at fault to clean up such a spill—particularly if the facility was located on the high seas and the spill did not damage or threaten United States resources?

Question 3. What are the applicable provisions of existing law, national and international, and H.R. 7501 which would authorize the United States to require a foreign flag vessel to take appropriate action to clean up any oil spill or to bear the cost of such activity?

Response. To avoid repetition, questions 2 and 3 will be discussed together. The first relevant provision in H.R. 7501 is found in Sec. 111(a) which provides in part:

> The Constitution and the law and treaties of the United States shall apply to deepwater port facilities licensed under this Act and insofar as consistent with international law to activities connected with the operation and use of such deepwater port facilities in the same manner as if the facilities were located in the navigable waters of the United States. Foreign flag vessels or natural or juridical persons who are not nationals of the United States using such facilities shall be deemed to consent to the jurisdiction of the United States for the purpose of this Act.

Sec. 111(b)(1) of H.R. 7501 provides for the application of selected sections of the Federal Water Pollution Control Act (Public Law 92–500), including sections relating to standards of liability and limitations on compensation. Sec. 103(b)(1) of the Administration's draft requires a determination that applicants for deepwater port facility licenses are financially responsible and Sec. 105(a) requires the submission of financial information to support such determinations. Sec. 107(2) of H. R. 7501 authorizes the Secretary of the Interior to require conditions in licenses to meet international obligations of the United States.

Under Sec. 311 of the Federal Water Pollution Control Act, 33 U.S.C. 1321, any party causing a discharge of oil "into or upon the navigable waters of the

United States" is liable to the United States, within certain limits, for cleanup costs. Furthermore, the Compensation Act proposed by the Administration, which implements the 1969 IMCO Civil Liability and 1971 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, provides further compensation for oil spills which cause or threaten damage to U.S. territory or territorial waters, even though the spill may have occurred on the high seas. In addition, under subsection (j) of Sec. 311, the Coast Guard is authorized to issue regulations respecting the removal of discharged oil and the prevention of such discharges.

In order to reduce the possibility of an oil spill accident in the first instance H.R. 7501 provides in Sec. 103(b)(3) that the Secretary of the Interior must determine before issuing licenses that:

(3) The facility will be located, constructed, or operated in a manner which will minimize or prevent any adverse significant environmental effects. In making the determination required by this paragraph, the Secretary shall consider all significant aspects of the facility including any connecting pipelines in relation to—

(A) effects on marine organisms;

(B) effects on water quality;

(C) effects on ocean currents and wave patterns and on nearby shorelines and beaches;

(D) effects on alternative uses of the oceans such as fishing, aquaculture, and scientific research;

(E) susceptibility to damage from storms and other natural phenomena; and

(F) effects on esthetic and recreational values.

Sec. 104(a) authorizes the Secretary to issue reasonable rules and regulations for the operation of deepwater port facilities under the Act. In addition, Sec. 107 authorizes the Secretary to include in licenses granted any conditions he deems necessary to carry out the purposes of the Act. The Act expressly provides in Sec. 107(3) that such conditions may include measures prescribed by the Secretary to prevent or minimize the pollution of the surrounding waters.

Although domestic legislation such as the implementing Act for the 1969 and 1971 IMCO Conventions is a possible basis on which the U.S. could hold persons accountable for oil spill damage, there are clear inadequacies in existing national and international law. However, under H.R. 7501 there would appear to be sufficient authority to hold a party at fault accountable for the oil spill damage envisioned within the Act.

Question 4. Provide for the record, all individual federal agency positions and the United States position in relation to the subject matter of deepwater ports now on the proposed agenda for the Law of the Sea Conference (see page 121 of the record and my request for that information).

Response. This information has already been submitted.

Question 5. Submit a response to Congressman Snyder's question on page 106 of the transcript.

Response. This information has already been submitted.

Question 6. Submit a response to my question on pages 119, 120, and 122 of the transcript.

Response. Page 119. See answer to question 7.

Page 120. It is not anticipated that the Department of State would have to establish an office to assist in the administration of any legislation on deepwater port facilities as existing Bureaus and Offices in the Department should be able to assume any dditional responsibilities required by the passage of legislation similar to H.R. 7501.

Page 122. This information has already been submitted.

Question 7. Explain in a comprehensive fashion the effect of Article 6 of the Convention on the High Seas, to which the United States is a signatory, as to an assertion of jurisdiction by the United States over foreign-flag vessels and their personnel, while such vessels are at a deepwater port facility located on the high seas.

If you rely on an "implied consent" theory to support such an assertion of jurisdiction, how does that theory fit into the language of Article 6, which states, inter alia, that "Ships shall sail under the flag of one state only and, save in exceptional cases expressly provided for in international treaties or in these articles, shall be subject to its exclusive jurisdiction on the high seas."

Response. Article 2 and Article 6 of the Convention on the High Seas must be read together. In our view, the United States has the right under the freedom of high seas to license the construction and to regulate the operation of deepwater port facilities. In its exercise of this right, the United States has the duty to take reasonable measures to effectuate the right. Clearly a balancing of interests is involved as reasonableness must be viewed in the context of a number of relevant factors.

Sec. 111(a) of H.R. 7501 provides that foreign flag vessels or natural or juridical persons who are not nationals of the United States using deepwater port facilities licensed under the Act shal be deemed to consent to the jurisdiction of the United States for the purposes of the Act. However, this provision is contingent upon being consistent with international law. Moreover, the provision that the United States has certain rights and duties with respect to its reasonable use of a high seas area.

No one would suggest, for example, that one fishing vessel on the high seas would be entitled unjustifiably to interfere with the fishing activities of another fishing vessel. Both are entitled to fish on the high seas and both have responsibilities which must be observed in connection with the exercise of such rights.

As a practical matter, it is difficult to conceive of a situation where a foreign flag vessel or its personnel would not want to abide by United States regulations in conjunction with the use of the deepwater port facility. Clearly there is a shared interest in safety of navigation and preservation of the marine environment, the two cases most likely to arise. Since the issue is possible infringement upon the navigational interests of foreign flag States, it should be pointed out that Sec. 114 of H.R. 7501 requires the Secretary of State to seek appropriate international measures regarding navigation in the vicinity of deepwater port facilities. The Department of State has, on more than one occasion, informed the Congress that we believe that the Intergovernmental Maritime Consultative Organization, the Law of the Sea Conference and other international fora should be used to more clearly define the legal regime applicable to deepwater port facilities.

Question 8. Provide a memorandum of law or legal opinion with appropriate citations, on the proposition embodied in H.R. 7051 and the Department of State's position, that the construction and operation of a deepwater port on the high seas constitutes a reasonable use of the high seas under international and maritime law.

Response. The most comprehensive and detailed information available on the Department of State's position in this regard is contained in two statements made to the Congress by Professor John Norton Moore, Chairman, NSC Interagency Task Force on the law of the Sea. Copies of these statements are attached.

Question 9. H.R. 7501 contemplates that the conditions of any license to construct and operate a deepwater port on the high seas by a United States citizen would be to insure that such establishment and operation does not violate this "principal" of reasonable use of the high seas. Exactly how will this be accomplished? What factors will be evaluated and made a condition of the license in this regard?

Response. Sec 107 of H.R. 7501 confers upon the Secretary of the Interior broad discretionary authority to include any conditions in licenses "deemed necessary to carry out the purposes of this Act." Certainly one of the purposes of the Act is to ensure that the construction and operation of deepwater port facilities is a reasonable use of the high seas. As is evident in the response submitted to question 8 above a variety of factors must be viewed in context to evaluate whether or not there would be any unreasonable interference with the rights of other high seas users.

One of the significant safeguards in this connection is provided in Sec. 103 (b)(2) which requires as a precondition to the issue of a license, determination by the Secretary that:

"The construction and operation of the proposed deepwater port facility will not unreasonably interfere with international navigation or other reasonable uses of the high seas, and is consistent with the international obligations of the United States . . ."

Further, Sec. 103(b)(3) requires the Secretary to consider in this determination all significant aspects of the facility in relation to—

(A) effects on marine organisms;
(B) effects on water quality;

(C) effects on ocean currents and wave patterns on nearby shorelines and beaches;

(D) effects on alternative uses of the oceans such as fishing, aquaculture, and scientific research;

(E) susceptibility to damage from storms and other natural phenomena; and

(F) effects on esthetic and recreational values."

Taken together, the above factors and others which might impinge upon or interfere with the interests of other States in their exercise of the freedom of the high seas, could be appropriate conditions inserted in a license, depending upon the precise factual situation, to effectuate the purpose of the Act. Without knowing the specific circumstances of an individual case, it is difficult to state the exact conditions of a given license. This is the very reason why criteria are laid down in H.R. 7501 and the Secretary of the Interior is given broad discretionary authority to implement the Act.

Question 10. Title II of the Ports and Waterways Safety Act authorizes the United States to unilaterally impose construction standards for tankers entering United States ports after 1975 if the Secretary of Transportation is not satisfied with the then prevailing international standards. Will a deepwater port facility constructed and operated under the concepts embodied in H.R. 7501 be considered a United States port for the purposes of requiring such foreign-flag ships to meet such construction standards?

Response. Sec. 111(b)(3) specifically states that the Ports and Waterways Safety Act of July 10, 1972 (Public Law 92–340; 86 Stat. 424) shall apply to deepwater port facilities licenses under H.R. 1751.

Question 11. Provide a listing of all international agreements to which the United States is a signatory, which would affect or have an impact upon the provisions of H.R. 7501 and a detailed analysis of the type of impact and whether or not specific provisions would be required in H.R. 7501 or similar legislation in that regard. In addition, indicate what would be required in the form of changes to any of these international agreements to insure comparability with H.R. 7501 and United States action, from an international law standpoint, of authorizing the construction and operation of deepwater ports on the high seas by United States citizens on the basis of a "reasonable use of the high seas".

Response. Please refer to the information already submitted in response to the question posed on p. 122, line 23 in the Testimony given by the Department of State on June 12, 1973 before the House Merchant Marine and Fisheries Committee.

Question 12. Assuming enactment of H.R. 7501 or similar legislation, provide an analysis of the cost to the Department of State for administration of the bill in terms of monies and personnel. Also provide information as to what the Department of State responsibilities will be under H.R. 7051 and how the Department will implement and fulfill those responsibilities in relation to federal agency coordination and international relations.

Response. We anticipate that officers and personnel already in existence in the Department of State would be able to fulfill the Department's responsibilities under H.R. 7501 or similar legislation. Sec. 104(b) requires the Secretary of the Interior to consult with all interested or affected Federal Agencies in carrying out all of his functions, under the Act. Sec. 104(c) provides that the Secretary of the Interior shall consult with other agencies to insure that applications for licenses contain all information required by the agencies. The Secretary would forward a copy of the license application to those Federal agencies with jurisdiction over any of the construction and operation aspects of deepwater port facilities and would not issue a license until he had been notified that the application met the requirements of the laws which such agencies administered. Sec. 107(2) provides the condition in which licenses may include such measures as the Secretary of the Interior may prescribe to meet United States international obligations.

Finally, Sec. 114, provides the Secretary of State, in consultation with appropriate Federal agencies, shall seek appropriate international measures regarding navigation in the vicinity of deepwater port facilities.

It is clear from the foregoing that the Department of State will have both a consultative and an action role under H.R. 7501. We expect that the consultative responsibilities will be discharged in accordance with well-established procedures. The action responsibilities will vary depending upon developments in the international community. We have already referred to the action taken with respect to the Third U.N. Conference on the Law of the Sea where the United States has introduced draft articles on the Coastal Seabed Economic Area which contain provisions relating to the construction and operation of deepwater port facilities. It will, of course, be necessary to take other initiatives depending upon the nature of any domestic legislation which might be enacted. In any case, the exact cost of these additional activities is difficult to assess at this stage and any attempt to provide precise figures would probably be inaccurate and misleading. What is clear is that the added financial burden to the Department would not be significant as a result of the enactment of H.R. 7501.

Mr. DOWNING. The committee will recess for 10 minutes, at which time we will hear our final witness, Dr. William Johnson.

[Brief recess.]

Mr. DOWNING. The committee will come to order.

Our next witness is Dr. William A. Johnson, Energy Adviser to the Deputy Secretary of the Treasury.

STATEMENT OF DR. WILLIAM A. JOHNSON, ENERGY ADVISER TO THE DEPUTY SECRETARY OF THE TREASURY; ACCOMPANIED BY DALE COLLINSON, ACTING ASSOCIATE TAX LEGISLATIVE COUNSEL; AND JOHN TIBEAU, BUREAU OF CUSTOMS

Mr. JOHNSON. I am very pleased to be here, Mr. Chairman.

On my left is Mr. Dale Collinson from the Treasury Department. He is the Acting Associate Tax Legislative Counsel.

On my left is Mr. John Tibeau, also of the Treasury Department Customs Bureau.

I am today incidentally representing the Deputy Secretary, William A. Simon, who is responsible for energy matters in the Treasury Department.

Mr. Chairman and members of the committee:

I am delighted to appear before you today to discuss deepwater ports and their relationship to the energy needs of the Nation.

In particular, I plan to focus on the economic benefits of very large crude carriers and the construction of deepwater ports to accommodate these carriers. This issue is covered in my prepared statement.

In addition, I will discuss some environmental benefits, which are not contained in the statement. This statement is, incidentally, a precis of a larger study done under my direction several months ago. I am submitting it for the record and will only summarize it here.

It now appears to many observers that the United States will have to increase significantly its crude oil imports in the near future.

The most efficient means of transporting large tonnages of crude oil over long distances is the "supertanker" or very large crude carrier, VLCC. The definition of a VLCC varies. At a minimum, it is capable of hauling in excess of 80,000 to 100,000 deadweight tons of crude oil. Some argue, however, that a more appropriate definition now is a vessel with a capacity in excess of 200,000 deadweight tons. The largest VLCC to date is 477,000 deadweight tons.

Vessels of this size would require deepwater ports. The gulf coast has no natural harbors capable of accommodating this class of tanker, and where suitable depths exist along the east coast, such as in Maine, Long Island Sound, and Delaware Bay, the development of a deepwater port has been impeded by State governments and is likely to encounter strong opposition from environmentalists. Yet, if the United States is to receive VLCC's, it must build these ports.

Deepwater ports now exist, are being constructed, or have been proposed in the Canadian maritime provinces, the Yucatan Peninsula, the Bahamas, Haiti, Puerto Rico, and the Virgin Islands.

In the absence of an East or Gulf Coast deepwater port, oil shipments from relatively distant sources, such as the Persian Gulf, are likely to be carried by VLCCs to one of these sites and then transshipped by smaller tankers to the United States.

We have assumed, therefore, that the benefits of a U.S. deepwater port will be the savings likely to result if, instead, crude oil were shipped to a U.S. port by supertanker and the transferred to mainland refineries by pipeline, tug-barge, or smaller tanker.

Three basic port technologies exist: The monobuoy; the sea island; and the artificial island.

There are also three alternative technologies for transferring the imported crude oil to mainland refineries: pipeline, tug-barge, and small tanker. Which technology or combination of technologies is most economic will depend on the relative costs of each alternative.

The study also estimates the additional costs of various environmental safeguards thought necessary to prevent, contain, or clean up oil spills. In this way, it determines whether these increased costs could affect the choice of a location or technology for a U.S. deepwater port, particularly if the safeguards required by the U.S. Government are not required by foreign governments.

We divide our analysis into four "modules". The first three are sequential: The supertanker, the deepwater port, and the transfer leg. Crude oil must first be shipped from the origin to the deepwater port. It must then be transferred from the port to the refinery. The fourth module, environmental safeguards, is additive to the first three. On each leg, additional investment, operations, and maintenance costs will be required to meet environmental standards specified by the government.

Originally, we had hoped to include two additional modules: The refinery and post-refinery leg.

In all, 23 U.S. and three foreign port facilities are considered.

Our choice of locations is illustrative only. We have selected as wide a cross-section of alternative sites as possible where suitable engineering and cost data were available. In the end, the choice of particular locations will depend on the companies, States, and local communities involved, and not a study by the Federal Government.

Let me summarize the more important conclusions of this study.

1. Under most circumstances, the construction of a U.S. deepwater port would result in significant savings to the United States.

The amount of these savings per barrel tends to increase with throughput, 30 percent below existing costs; less when compared to a foreign tanker.

There is a major exception to this conclusion, however, then U.S. flag is required for tankers docking at U.S. ports while foreign flag is permitted for tankers docking at foreign ports. The flag of the vessels could be the decisive factor in a private decision to opt for a foreign deepwater port. For example, comparing the Long Branch monobuoy with a Canadian sea island and assuming a 6 million barrels a day throughput, use of U.S. VLCCs would convert a 15 percent cost advantage for the U.S. port into an 18 percent cost disadvantage.

The reason for this is that, by far, the most important component of total costs is the tanker module. As a result, any factor affecting supertanker costs tends to drive the results of the study. The least cost alternative is often that which permits the most efficient use of VLCCs.

4. The environmental safeguards specified by EPA, do not, as a rule, add appreciably to the total costs of oil imports or affect the economics of deepwater port alternatives. A partial exception occurs when supertankers are equipped with double bottoms. Double bottoms account for over 90 percent of total environmental costs and, when required at U.S. but not foreign deepwater ports, reduce considerably the savings to the United States likely to result from a U.S. deepwater port.

5. With one major exception, pipeline distribution provides the least cost means of transferring crude oil from deepwater ports to refineries. Moreover the greater the throughput, the greater the economic benefits from pipeline distribution. The exception is the Gulf Coast port handling less than 2 million barrels per day.

In general, the more concentrated this demand, as on the East Coast, the more efficient is pipeline distribution.

In comparing locations, certain alternatives appear better than others.

In each case, however, the differences in costs are not particularly large.

Our analysis suggests, in other words, that factors other than costs are likely to be the dominant considerations in the choice between deepwater port locations.

On the East Coast, the choice between port technologies will depend on a number of factors, including the weather. In general, however, the monobuoys are favored.

By contrast, the monobuoys are clearly preferable in the Gulf of Mexico for all levels of throughput and under all assumptions about weather and tanker utilization.

In summary, the study favors the monobuoy facilities in both the Gulf and the Atlantic, although in the Atlantic several alternatives to monobuoys would provide nearly the same level of benefits.

In both regions, however, the construction of U.S. deepwater ports would, under most conceivable circumstances, result in considerable savings than if imported crude oil were to enter the United States through foreign deepwater ports.

In most cases, the U.S. deepwater ports result in significant cost savings. The exceptions occur only at very low levels of throughput and, at the same time, where VLCCs serving U.S. ports are required to have double bottoms, while tankers serving foreign ports are not.

Assuming full environmental safeguards at both U.S. and foreign ports. the cost savings resulting from the best East Coast alternative would range between 3.3 cents per barrel for 0.6 mbb/day and 16.5 cents per barrel for 6.6 mbbl/day.

In the Gulf Coast, for the levels of throughput considered, savings under the best of assumptions would range between 2.7 cents per barrel for 1.4 mbbl/day and 18.2 cents per barrel for 14.7 mbbl/day.

In any event, the penalties from building a deepwater port under false assumptions about throughput are generally not that great, even in the Gulf Coast region, while the rewards could be substantial.

In short, our analysis suggests that, on the basis of costs, an argument can be made for building deepwater port facilities on both the East and Gulf Coasts.

Let me now talk beyond the text, if I may, about some of the other considerations, besides economics, that will enter into a decision to build a deepwater port in the United States.

First of all, one thing that comes out very clearly from our analysis is that the cost of building the port facility, itself, is almost trivial by small compared to the total cost of shipping oil to the United States. There is really no reason for the government to anticipate any demand or expect that there will be any requirement for Federal participation in the construction of deepwater ports. The construction of these ports is well within the economic capacities of the private parties who would want to build them.

Second, when the Council of Economic Advisers was conducting this study on the economics of deepwater ports, a parallel study was being undertaken by the Council on Environmental Quality. Something happened at the end of both of these studies which was a happy, fortuitous event. What turned out to be economically optimal also turned out to be environmentally optimal as well. CEQ concluded that a monobuoy located relatively far out at sea would be, in its judgment, the environmentally optimal way of bringing crude oil to the United States.

I think we have to look at the alternatives. What is happening at present? What will continue to happen if we bring in the additional amounts of crude oil that we will require? We now have many small 40,000- or 50,000-ton vessels which are carrying crude oil to the United States. A number of these vessels are out of date. They have not been designed to include various environmental safeguards that would be included on very large crude carriers. Some of them leak. They have single bottoms. At present, these vessels are coming into onshore ports, where there is a greater risk of collision with other ships and also with various structures such as bridge abutments. There is also a greater risk of grounding, and they contribute to the congestion that may exist at certain port facilities.

It would be no different if we were to rely on offshore deepwater port facilities in, let us say, the Bahamas or Canada. There, a very large crude carrier would unload its cargo onto smaller vessels which would come into East and Gulf Coast U.S. ports. We would have the same risk of collision, the same risk of grounding, and the same contribution to congestion.

By contrast, a deepwater port, particularly if it is a monobuoy, could be located far out at sea, perhaps from 10 to 40 miles from the shoreline. It would, most likely, be connected to onshore storage facilities by pipeline, which is the safest form of transmission given environmental considerations. This pipeline would be constructed with appropriate environmental safeguards, such as a blocking-valve system, which would cut off any leakage that might occur. It would also be buried both for economic and environmental reasons.

Because the very large crude carriers would be discharging their oil far out at sea, there would be a limited risk of grounding. The VLCC would be out of heavily used sea lanes, with less risk of collision with other vessels and bridges and other structures.

Moreover, and very important, the very large crude carriers would be new vessels. Aside from being more economic, they would be designed to take into account to the maximum extent environmental safeguards such as double bottoms and other spill prevention devices.

There is a third alternative, which is really no alternative at all, and that is for the United States simply not to import oil in the future. In the long run we have to rely on domestic sources, but in the short run we have no alternative. During the next 5 to 7 years, if we are to avoid far more substantial shortages than we are experiencing at the present time, we will have to import oil or we will have far worse problems of allocation than we have now.

Mr. Chairman, we need imports. We must bring them into our country and we must bring them in in the most efficient and most environmentally sound manner. To do this we need legislation authorizing deepwater ports.

Thank you.

Mr. DOWNING. Thank you, Dr. Johnson.

Your full statement will appear at this point in the record.

[Prepared statement follows:]

STATEMENT OF DR. WILLIAM A. JOHNSON, ENERGY ADVISER TO THE DEPUTY SECRETARY OF THE TREASURY

Mr. Chairman and members of the committee, I am delighted to appear before you today to discuss deepwater ports and their relationship to the energy needs of the nation. In particular, I plan to focus on the economic benefits of very large crude carriers and the construction of deepwater ports to accommodate these carriers. This issue is covered in my prepared statement. In addition, I will discuss some environmental benefits, which are not contained in the statement. This statement is, incidentally, a precis of a larger study done under my direction several months ago. I am submitting it for the record and will only summarize it here.

INTRODUCTION

It now appears to many observers that the United States will have to increase significantly its crude oil imports in the near future. Projections of import demand vary widely. Those used as the basis of this study have been made by the Interior Department for both the East and Gulf Coasts. (See Tables 1 and 2).

TABLE 1.—EAST COAST IMPORTS THROUGH DEEPWATER PORTS
[Thousands of barrels per day]

	1975	1980	1985	2000
Case I	765	1,135	1,572	2,500
Case II	765	3,505	5,106	6,600
Case III	765	1,135	1,572	2,500
Case IV	765	2,000	1,200	3,200
Case V	765	1,000	600	800

TABLE 2.—GULF COAST IMPORTS THROUGH DEEPWATER PORTS
[Thousands of barrels per day]

	1975	1980	1985	2000
Case I	1,573	1,805	3,248	10,900
Case II	1,573	1,805	3,248	10,600
Case III	1,573	4,175	6,782	14,700
Case IV	1,573	400	0	0
Case V	1,573	1,400	600	2,400

The level of throughput for each region will depend on the locations of new refinery capacity and domestic production of oil and natural gas. Projections for the East Coast range between 0.8 and 6.6 million barrels per day; for the Gulf Coast, between 0 and 14.7 million barrels per day. Future import requirements will be minimized if reserves on the Outer Continental Shelf can be exploited and U.S. production of alternative fuels, such as natural gas, is increased.

The most efficient means of transporting large tonnages of crude oil over long distances is the "supertanker" or very large crude carrier (VLCC). The definition of a VLCC varies. At a minimum, it is capable of hauling in excess of 80,000 to 100,000 DWT of crude oil. Some argue, however, that a more appropriate definition now is a vessel with a capacity in excess of 200,000 DWT. The largest VLCC to date is 477,000 DWT.

Vessels of this size would require deepwater ports[1]. The Gulf Coast has no natural harbors capable of accommodating this class of tanker, and where suitable depths exist along the East Coast, such as in Maine, Long Island Sound, and Delaware Bay, the development of a deepwater port has been impeded by state governments and is likely to encounter strong opposition from environmentalists. Yet, if the United States is to receive VLCCs, it must build these ports.

The purpose of this document is, first, to determine whether, given cost considerations alone, it would benefit the nation to have one or several of these ports along the East and Gulf Coasts. To do this, we must have a basis for comparison. Deepwater ports now exist, are being constructed, or have been proposed in the Canadian maritime provinces, the Yucatan Peninsula, the Bahamas, Haiti, Puerto Rico, and the Virgin Islands.[2] In the absence of an East or Gulf Coast deepwater port, oil shipments from relatively distant sources, such as the Persian Gulf, are likely to be carried by VLCCs to one of these sites and then transhipped by smaller tankers to the United States. We have assumed, therefore, that the benefits of a U.S. deepwater port will be the savings likely to result if, instead, crude oil were shipped to a U.S.

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[1] A port capable of handling 250,000 DWT tankers must have a minimum depth of about 75 feet. With restricted draft it is possible, however, to operate with lower depths depending on vessel design and height of the tide.

[2] Because of its restricted draft, some experts question whether the Virgin Islands port can, properly, be called a deepwater port. Several of these port schemes are also thought not to be serious proposals by knowledgeable observers.

port by supertanker and then transferred to mainland refineries by pipeline, tug-barge, or smaller tanker. If these savings are positive, a case could be made that a U.S. deepwater port is economically justified.

A second objective of the study is to determine which of several alternative technologies for building a U.S. deepwater port and transferring oil to the mainland are most desirable given cost considerations alone. Three basic port technologies exist: the monobuoy; the sea island; and the artificial island[3]. There are also three alternative technologies for transferring the imported crude oil to mainland refineries: pipeline, tug-barge, and small tanker. Which technology or combination of technologies is most economic will depend on the relative costs of each alternative.

Finally, the study also estimates the additional costs of various environmental safeguards thought necessary to prevent, contain, or clean up oil spills. In this way, it determines whether these increased costs could affect the choice of a location or technology for a U.S. deepwater port, particularly if the safeguards required by the U.S. Government are not required by foreign governments.

METHODS OF ANALYSIS

The basic method of analysis used in this study is a comparison of all costs of landing a given amount of crude oil at East and Gulf Coast refineries through U.S. and foreign deepwater ports. Because throughput is held constant, savings in costs can be treated as a rough measure of benefits. Of course, a number of other factors, such as environmental considerations and national security, will have a bearing on whether a U.S. deepwater port would be beneficial and should be built. Our study measures only the economic benefits of a superport.

We divide our analysis into four "modules". The first three are sequential: the supertanker, the deepwater port, and the transfer leg. Crude oil must first be shipped from the origin to the deepwater port. It must then be transferred from the port to the refinery. The fourth module, environmental safeguards, is additive to the first three. On each leg, additional investment, operations, and maintenance costs will be required to meet environmental standards specified by the government.

Originally, we had hoped to include two additional modules: the refinery and post-refinery leg. The refinery costs probably account for the largest share of the total costs of processing imported crude oil. However, within each region, the additional refinery capacity required by greater U.S. consumption of imported crude oil should cost more or less the same regardless of which alternative is chosen or whether a deepwater port is built at all. If so, exclusion of refinery costs should not bias our results.

Exclusion of the post-refinery leg may pose some difficulties. Opinions vary on whether, in a free market, a particular deepwater port location would affect or be affected by the location of refinery capacity. Some feel that a port location would be determined by the refineries' location and the refineries' location by the internal distribution system. Others argue just the opposite. A deepwater port will determine the location of refineries and petrochemical complexes and, in turn, the internal distribution system. In any final analysis, one must consider whether the post-refinery leg does have an impact on the economics of a deepwater port.

Our treatment of capital costs in this study poses at least two difficulties. First, the time required to build and install each capital input varies from 0.5 years to 6 years. Second, the anticipated lifetime of each component also varies from 15 to 99 years. Differences in construction period and lifetimes may have a bearing on which type of facility should be built. These differences must also be taken into account in any estimate of the total costs of a port facility.

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[3] A monobuoy is also called a single point mooring or single buoy mooring. As its name implies, it is a mooring facility at which the tanker can connect with pipelines distributing oil to mainland storage facilities and refineries. The term "sea island" is often used interchangeably with the term "platform", although the two are by no means synonymous. The sea island assumed in this study is a platform connected by pipeline to the mainland storage areas. Discharge of oil may also occur by ship-to-ship transfer at the platform. An artificial island is a man-made island built up with fill. Aside from its construction, it differs from a sea island primarily in that storage facilities would be located on the island and not on the shore.

Using a 10 percent discount rate, the cost of each capital input are compounded annually to present value during the initial year of operation. The present value for each input is then converted to an equivalent annual cost by dividing by an annuity factor.[4] This method of handling capital costs is logically identical to the more familiar present value and internal rate of return calculations. However, it has three major advantages. First, the different lifetimes of each capital input can be handled easily without having to make assumptions about the length of service of the deepwater port or the scrap value of its components. Second, equivalent annual cost best meets the primary objective of the study—to estimate cost differentials for alternative port facilities. The equivalent annual cost is an annualized measure of capital costs; the differences between the equivalent annual costs of two port facilities, the annual cost differential or measure of benefits resulting from the construction of one alternative rather than another.

Operating and maintenance costs can be added directly to the equivalent annual costs of capital inputs. Some O and M costs are associated with each major component of the deepwater. Others are spread over all components. We assume two types of O and M costs: linear and step. A cost is judged to be linear if, within each increment, it increases with throughput. It is judged to be step if it increases only at the beginning of the increment.[5]

In Table 3, we present a sample print-out summarizing the cumulative equivalent annual costs of all increments required to raise the capacity of a monobuoy off Long Branch, New Jersey, from 0 to 6 million barrels of crude oil per day. This print-out indicates the costs of all four modules. The total equivalent annual cost for the Long Branch monobuoy is $368.8 million for 1 mbbl/day throughput. This cost rises to $765.4 million for 2.2 mbbl/day and $2.0 billion for 6 mbbl.

TABLE 3.—ESTIMATED COSTS OF A LONG BRANCH MONOBUOY WITH PIPELINE DISTRIBUTION TO EAST COAST REFINERIES USE OF FOREIGN SUPERTANKERS AND 0 TO 6 MBBL/DAY THROUGHPUT ASSUMED

[Thousands of dollars equivalent annual costs]

	Foreign tankers nonevironmental costs				Environmental costs				
Throughput	Supertank	Port	Transfer	Subtotal	Barge DB	Tanker DB	Other ENV	Subtotal	Total
0.0+	0	12,339	15,899	28,738	0	0	3,017	3,017	31,755
1.0−	301,967	14,593	18,768	335,329	255	27,821	5,417	33,493	368,821
1.0+	301,967	20,118	19,755	341,840	255	27,821	5,417	33,493	375,332
2.2−	659,560	21,174	19,806	700,539	255	59,209	5,417	64,881	765,420
2.2+	659,560	28,329	21,121	709,009	255	59,209	5,417	64,881	773,899
3.4−	1,017,152	29,543	23,737	1,070,431	510	90,597	5,417	96,523	1,166,954
3.4+	1,017,152	36,697	25,052	1,078,900	610	90,597	5,417	96,523	1,175,423
4.7−	1,398,584	37,911	25,120	1,461,614	510	131,970	5,417	137,896	1,599,510
4.7+	1,398,584	45,065	26,435	1,470,084	510	131,970	5,417	137,896	1,607,980
6.0−	1,787,962	46,279	29,051	1,263,292	764	165,397	5,417	171,578	2,034,870

Table 3, in effect, traces a cost curve for the Long Branch monobuoy. This curve is plotted in Figure 1, along with a similar curve for a sea island located in Nova Scotia and supplying crude oil to the East Coast U.S. market by means of tanker. These cost curves provide the basis for our comparison of alternative deepwater ports. The least cost port facility will have the lowest curve for a given level of throughput.

For the two cases illustrated, the Long Branch monobuoy is clearly optimal for all but the lowest level of throughput. The vertical distance between the curves measures the savings or benefits resulting from relying on the Long Branch rather than the Canadian facility. For example, at 6 mbbl/day, the annual savings made possible by the American port would be about $346 million or about 16¢ per barrel.

This, in brief, is how our analysis of alternative deepwater port facilities is structured. In all, 23 U.S. and three foreign port facilities are considered. (See Table 4). The investment in each of these facilities is converted to equivalent annual cost measures and then added to annual O and M costs.

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[4] An annuity is an annual income paid in equal installments for a specified period of time. This income is equivalent when discounted to a fixed initial payment by the investor. The annuity period assumed is the anticipated lifetime of each capital input.

[5] Most capital costs are treated as step costs. There are two major exceptions, however: tug-barges and tankers.

In this way, cost functions are generated for each port over a range of throughputs. Finally, for given levels of throughput, each of the facilities is ranked and the differences in costs between these facilities and the lowest cost alternative are computed.

We should stress at the outset that our choice of locations is illustrative only. We have selected as wide a cross-section of alternative sites as possible where suitable engineering and cost data were available. In the end, the choice of particular locations will depend on the companies, states, and local communities involved, and not a study by the Federal Government.

In the next section, we discuss the many assumptions underlying this study; in the following section, some of its basic conclusions. Finally, in the last section, we estimate the benefits (or losses) likely to result from reliance on the least cost U.S. superport rather than its least cost foreign alternative.

BASIC ASSUMPTIONS

We have had to make a number of assumptions. In several cases, we have been able to test the sensitivity of our analysis to these assumptions; in most cases, however, we have not. Throughout, we have tried to make these assumptions as realistic as possible. In this section, we also try to make them as explicit as possible.

1. *The Locations of U.S. and Foreign Superports.*—As we have indicated in Table 4, we examine seven locations on the East and Gulf Coasts and two locations abroad. Additional U.S. sites have been suggested, particularly along the Gulf Coast. Additional foreign sites have also been suggested including Mexico, Puerto Rico, and New Brunswick, Canada. For our purposes, the sites selected are more than ample. They cover the general areas likely to be chosen as locations for deepwater port facilities. However, because some potential sites have been omitted, our study cannot and should not be considered the definitive answer to where a deepwater port ought to be located. Specific site studies would be necessary before making such a determination.

2. *Choice of the Base Cases.*—We have chosen as a basis for comparison deepwater ports in the Canso Straits in Nova Scotia, and near Freeport in the Bahamas. These ports now exist or are under construction at these sites. None, however, involves crude oil transshipment to the United States. Instead, these ports are intended, for the most part, to handle imported crude refined nearby to supply certain finished products to U.S. markets. The hypothetical foreign superports assumed in this study would allow transfer of large tonnages of oil destined for the United States from supertankers to smaller vessels. These vessels would then enter existing U.S. ports.

There are alternative bases for comparison. For example, the supertanker might discharge its crude by lightering at sea. We have not chosen this alternative, among other reasons, because it is generally thought to be environmentally unsound. Some feel that the base case should be continued use of regular port facilities and tankers averaging, let us say 40,000 DWT. The problem with this option, however, is that the economic benefits of the larger tankers have been demonstrated and, for this reason, both supertankers and foreign deepwater ports are now being built. It seems unlikely that, once they are completed, the domination of smaller tankers on longer runs would continue.

The base case chosen is not ideal. However, all things considered, it appears to be the most realistic choice possible.

3. *The Choice of Technologies for the Deepwater Ports.*—We assume one of three port technologies.

a. *Monobuoy.*—The monobuoy is an offshore mooring connected to mainland storage facilities by a pipeline. It would not have the protection of a breakwater and the supertanker would be free to rotate around the buoy. The monobuoy is the simplest and cheapest of the three alternatives.

b. *Sea Island.*—The sea island would be fastened by piles to the ocean floor. The sea island is, in each case studied, protected by a natural breakwater. The supertanker would be tethered on one side at both the bow and stern. The crude oil would then be transferred from the tanker to storage facilities on shore by means of one or more pipelines.

c. *Artificial Island.*—An island would be constructed with fill and protected by a natural or man-made breakwater. The primary function of the island, over and above that of a sea island or monobuoy, would be to house storage facilities. Transfer to the mainland could occur by pipeline, tug-barge, or small tanker. The artificial island is the most elaborate and, generally, the most costly of the three alternatives.

Not all technological alternatives are assumed at each site. We have excluded those alternatives for both American and foreign ports that, in its judgment, are not feasible from an engineering point of view. The technologies assumed at each site are also listed in Table 4.

4. *Sources of Imported Crude Oil.*—We assume that all crude oil shipped through East and Gulf Coast deepwater ports will come from the Persian Gulf. This may seem an extreme assumption. However, in terms of reserves, the Persian Gulf easily outranks all other producing areas. Although some oil imports may also come from Libya, Nigeria, and Venezuela, the source of most new oil imports will be the Persian Gulf fields.[6]

Moreover, not all imported crude oil will be shipped to the United States in VLCCs and through deepwater ports. The economics of the supertanker will depend, among other things, on the length of the haul. This fact, alone, rules out use of the supertanker to carry Venezuelan oil. Imports from Venezuela, and possibly Libya and Nigeria, will still be carried by smaller tankers through conventional port facilities. There is provision in our estimates of throughput for some imports of crude oil by other than supertankers and through other than deepwater ports.

TABLE 4.—*Port and transfer technologies for superport sites*

Machias	Sea Island (platform)—Tug barge.
Raritan Bay	Sea Island (platform)—Pipeline. Sea Island (platform)—Tug barge. Island—Pipeline. Island—Tug barge.
Long Branch	Island—Tug barge. Island—Pipeline. Monobuoy—Pipeline. Monobuoy—Tug barge.
Cape May	Sea Island (platform)—Pipeline. Island—Tug barge. Island—Pipeline. Sea Island (platform)—Tug barge.
Cape Henlopen	Monobuoy—Pipeline. Monobuoy—Tug barge. Island—Pipeline. Island—Tug barge.
Bayou LaFourche	Island—Pipeline. Island—Tug barge. Monobuoy—Tug barge. Monobuoy—Pipeline.
Freeport	Monobuoy—Pipeline. Monobuoy—Tug barge.
Nova Scotia	Sea Island (platform)—Tanker. 1. Distribution to East Coast Refineries.
Bahamas	Sea Island (platform)—Tanker. 1. Distribution to East Coast Refineries. 2. Distribution to Gulf Coast Refineries.

One might also consider oil shipments via VLCC from the eastern Mediterranean. These shipments would carry both Libyan and Persian Gulf oil, the latter transported to the eastern Mediterranean by means of pipeline. Because of political instability in the Middle East, the vulnerability of the pipeline, and the policies of the present Libyan regime, it now seems highly unlikely that the United States would find it possible to rely heavily on this source of foreign oil. We have, therefore, chosen to ignore this alternative.

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[6] For example, see U.S. Department of Commerce, Maritime Administration, *Feasibility of a North Atlantic Deepwater Oil Terminal,* Soros Associates, July, 1972, pp. S–11.

5. *The Level of Throughput at U.S. Deepwater Ports.*—Because the study estimates the costs of each alternative at various levels of throughput, it is important to know the range of throughput over which one must carry the analysis. For all East Coast and one Gulf Coast port, we assume 0 to 6 million barrels per day; for the remaining Gulf Coast port, 0 to 10 million barrels. These estimates are based on throughput projections discussed in the first section.

The level of throughput is increased segmentally for each deepwater port. The size of each segment was determined by the Army Corps of Engineers to be consistent with best engineering practice. In general, four or five discrete steps are required to reach an ultimate throughput of 6 million barrels per day.

6. *The Size, Type, and Number of Supertankers*—We also assure throughput a 250,000 DWT supertanker.

Since choosing 250,000 DWT, Shell Oil has announced contracts for two 520,000 ton tankers and trade journals have begun discussing the possibility of one million ton tankers in the not too distant future. The 250,000 ton tanker may, by 1980 or 1985, be as outdated as the 20,000 ton tanker is now.

To assume a larger supertanker would require considerable reworking of the data. For our purposes, however, it is sufficient to note that the larger the tanker, the more likely that those deepwater port alternatives relatively close to the shore (i.e., sea islands and artificial islands) would be placed at a greater cost disadvantage. Much would depend in the amount of dredging and the length of berths required to accommodate the larger tankers at the various port sites. By contrast, because the monobuoys are further out at sea, their costs should be less affected by changes in tanker size.[7]

We have computed costs for both U.S. and foreign flag supertankers. The choice of flag is critical to the study of the economics of U.S. and foreign deepwater ports. Under all assumption, the VLCC is responsible for over 80 percent of the total costs of deepwater port operations.[8]

The equivalent annual cost of a foreign vessel is about 60 percent that of a domestic vessel. Clearly, anything that influences the relative costs of VLCCs will influence the relative costs of deepwater port operations.

We also assume two types of tanker construction: conventional and double bottoms. Double bottoms are considered by EPA and CEQ to be among the most important environmental safeguards necessary to assure reasonable protection against major oil spills. We treat the cost of double bottoms as additive. In this way, we are able to estimate whether a U.S. requirement that supertankers have double bottoms, which is not imposed by Canada or the Bahamas, might put U.S. deepwater ports at a significant cost disadvantage.[9]

Finally, we must estimate the number of supertankers required for each level of throughput, each deepwater port, and each technology. This number varies with both level of imports and distance. It also varies with weather conditions and the existence of natural or manmade breakwaters at each site. For example, for a certain number days monobuoys in the Atlantic may be inoperable because of the weather. Supertankers would have to stand-off before being able to moor and discharge their cargoes. By contrast, protected sea islands and artificial islands along the Atlantic Coast would have a greater all-weather capability and would, for this reason, allow more efficient use of VLCCs. This cost differential should be considered in our analysis of alternative port sites and technologies.

7. *Assumptions about the Weather.*—The treatment of weather was, perhaps, the most difficult issue considered in the study. Originally, we assumed a weather differential which we then expressed in terms of less efficient use of VLCCs serving both Atlantic and Gulf Coast monobuoys. (All sea islands and artificial islands would be protected by natural or man-made breakwaters; monobuoys would not.) This assumption did not affect, appreciably,

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[7] Some observers believe it is possible to design larger tankers with minimal addition to draft. If so, use of larger tankers may not affect appreciably the relative costs of deepwater ports close to the shore. However, the reduced draft may be achieved at still another price, less efficient handling of the vessel.

[8] For the example of the Long Branch monobuoy, see Table 3.

[9] In estimating the higher costs of double bottoms we not only consider the higher construction costs, but also the lower carriage capacity of double bottom vessels having the same dimensions as conventional vessels.

the relative costs of the East Coast alternatives; sea islands and artificial islands in New York Harbor and Delaware Bay are favored by extreme assumptions about weather differentials in the Atlantic. The monobuoy alternatives are favored by the absence of weather differentials.

Disagreement with our initial treatment of the weather differential stemmed, in part, from objections to our implicit assumption that monobuoy practices would continue with little improvement in the near future. In fact, monobuoy operations are relatively recent and have been evolving rapidly. There is a consensus in the industry that, as experience in the use of monobuoys grows, technology will improve to the point where downtime because of weather will be minimized. If so, the monobuoys would suffer little, if any, disadvantage because of adverse weather conditions. Second, the primary constraint imposed by weather is not in the discharging of oil in high seas, but in the tanker's mooring at the monobuoys. In most conditions of weather, it would be possible for pumping to occur as long as there were a break in the weather sufficient to allow mooring. Third, the problem is essentially one of queueing. Adverse weather would result in a line-up of tankers at the monobuoy. Work by EPA suggests that the size of the queue and, hence, waiting time could be reduced substantially by the simple and relatively inexpensive expedient of adding one additional monobuoy. Finally, the island, too, may be inoperable during bad weather if the tugs needed to assist tankers to their berths are unable to put to sea.

For these reasons, we also estimate the costs of the various alternatives assuming no weather differential at a given location. This assumption, in effect, sets a lower as well as an upper boundary to the impact of weather conditions on the choice of deepwater port locations and technologies. For the most part, we restrict ourselves in this paper to the second case only. We assume no weather differential at each port site.

8. *The Discount Rate.*—We use throughout a discount rate of 10 percent. This, we feel, is a realistic measure of the value of capital in the United States. It is also the standard now used by OMB.

Our choice of 10 percent has stirred some controversy. This, it is argued, is much too low and unacceptable to industry given the substantial risks involved in constructing a deepwater port. What are these risks? For one, recent changes in U.S. oil import policies may result in a reduced need for imports beyond, let us say, 1980 or 1985. Or, there may be changes in policies affecting other energy sources, such as natural gas, that increase the consumption of these sources and, because of this, decrease import demand for crude oil. In each case, the risks involve, primarily, the useful or economic lifetime of the deepwater port facility. We account for these risks by varying the lifetime of the facility to determine whether, in fact, this would result in different port sites and technologies providing the least cost means of importing Middle Eastern crude oil. In effect, therefore, 10 percent represents a risk-free rate of return on investment.

9. *The Lifetime of the Facility.*—We assume, first, that each capital input would be used for its full physical lifetime. We then assume maximum economic lifetimes of 20 and 10 years in the expectation that the port would be used only for a finite number of years, after which alternative sources of fuel or energy would come into being and terminate a substantial U.S. requirement for imported oil. However, we exclude from this constraint capital inputs that are not committed to the port itself, but would have alternative uses were the port to cease operations. These inputs are assigned their full physical lifetimes throughout. The most important are supertankers.

Imposition of a 20-year lifetime on non-reusable capital imputs yields results little different from our initial assumption of full physical lifetime. However, imposition of a 10-year economic lifetime does result in some change in our conclusions. As a general rule, the shorter the lifetime, the more the monobuoy and tug barge mode of transfer are favored over the islands and pipeline transfer. In any event, the cost differentials are not that great. For our purposes, we can assume full physical lifetime. Alternative computations are available, however, for those who would prefer a different assumption.

10. *The Location of New Refinery Capacity.*—The destinations to which throughput is transferred will depend on the location of new refinery capacity. In the absence of any guidelines, we have assumed that the geographic dis-

persion of East and Gulf Coast refineries will, in the future, be the same as the dispersion at present. On the East Coast, this means transshipment of large amounts of crude oil to New York and the Upper Delaware Bay and a small amount of crude oil to the New York River. On the Gulf Coast, this means transshipment to the many refineries located on or near the Gulf of Mexico. The percentages of throughput assumed to be distributed to each refinery site on each coast are presented in Table 5.

Some have disagreed with this choice of locations of future demand for crude oil. Where demand will be located in the year 2000 is anyone's guess. Some dispersion of refinery capacity, particularly on the east coast, now seems likely.

11. *The Choice of Technology for the Transfer Leg.*—We also assume three means of transferring the crude oil from the deepwater port to refineries: pipeline, tug-barge, and small tanker. In no case is a pure transfer technology assumed. On the East Coast, for example, the imported crude oil may be pumped ashore by pipeline and then transshipped by tug-barge to a refinery. Pipeline transshipment would be used only if there is sufficient throughput. This is not the case for the York River refinery which, it is assumed, would under all circumstances receive its crude oil via tug-barge or tanker.[10]

TABLE 5.—*The assumed distribution of crude oil to various refinery sites*

East Coast:	
Percentage to:	
Yorktown	4. 0
New York	26. 0
Wilmington	70. 0
Gulf Coast:	
Percentage to:	
New Orleans [1]	5. 0
Baton Rouge	8. 9
Lake Charles	6. 4
Pascagoula	5. 8
Houston	19. 7
Beaumont	26. 7
Corpus Christi	6. 3
Texas City	9. 4
Freeport	1. 8

[1] The New Orleans percentage was subsequently changed to "15.0."

We were also faced with a choice between tug-barges and small tankers. An examination of costs suggested that, for short hauls close to the shore, tug-barges provide much the more efficient alternative. For relatively long hauls, however, the opposite is the case. The reason for this is that the higher costs of tankers are then nullified by the greater speeds obtained on the open seas. The breakeven point appears to occur at about 1000 miles round trip. Therefore, to simplify our analysis, we assume that tug-barges would be used for transfer from a U.S. deepwater port while tankers would be used for transfer from a foreign deepwater port to U.S. refineries.

We assume throughout that the tug-barge and tanker would have a 40,000 DWT capacity. We also assume both conventional and double bottom tug-barges and tankers. Finally, we assume that tug-barges carrying crude oil to U.S. refineries would be subject to the Jones Act and would, under all circumstances, sail under the U.S. flag, while tankers carrying crude oil from foreign deepwater ports would have an advantage in their ability to sail under a foreign flag.

12. *Restriction of Refinery Demand to PADs I and III.*—We also assume that all imports of crude oil through East Coast deepwater ports will serve PAD I (East Coast) refineries, while all imports through Gulf Coast deep-

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[10] In retrospect, we should have ignored distribution to the York River refinery altogether on the assumption that, were this refinery to depend on foreign crude, it could be accommodated by smaller tankers sailing directly to the York River from origins other than the Persian Gulf.

water ports will serve PAD III (Gulf Coast) refineries. This is an extreme assumption that, in retrospect, we wish we had varied. In practice, some of the crude oil entering the United States through PAD I will be transshipped to other PADs. This is especially true of Gulf Coast ports which would also supply PAD II (the central states) and PAD III refineries.

Our restriction of throughput to the PAD in which the port is located probably does not have that great an impact on the relative costs of East Coast deepwater ports. However, it does bias our results for the Gulf. Under all assumptions about throughput, a monobuoy at Freeport, Texas, appears from our analysis to be a better choice than a monobuoy at Bayou LaFourche, Louisiana. The reason for this is apparent in the data on the distribution of import demand presented in Table 5. Sixty-four percent of the refining of crude oil in PAD III is concentrated in Texas in areas relatively close to the proposed Freeport facility. If, instead, substantial amounts of crude oil were to be imported through a Gulf Coast deepwater port for eventual transshipment to the central or eastern states, the optimal port site would most likely be off the Louisiana coast. In other words, the disadvantage of the Bayou LaFourche site is more apparent than real. It is the result of a simplifying assumption. Here, more than anywhere else, one can see the dangers of using the results of this study as a justification for or against a particular deepwater port site.

13. *The Mutual Exclusivity of Port Alternatives.*—For the most part, we assume that, within each PAD, each port facility would operate to the exclusion of all others. In other words, we assume that each deepwater port on the East Coast would, by itself, supply all East Coast refineries and that each deepwater port on the Gulf Coast would supply all Gulf Coast refineries in the proportions assumed in Table 5.

In the real world, one might expect more than one deepwater port on each coast with some market specialization and resulting economics of operation. This is particularly likely on the Gulf Coast where both projected imports and dispersion of refineries are considerably greater than on the East Coast. In Section 5 of this report we do, in fact, consider the possibility of two deepwater ports operating simultaneously on the Gulf Coast. To do this we have had to make several adjustments, notably in the transfer module, to take into account the economies likely to result from greater market specialization within the Gulf Coast region.

14. *Environmental Controls.*—EPA has drawn up a list of minimum standards necessary to prevent, contain, and clean up spills resulting from operations at each type of facility. They have also estimated the costs of implementing these requirements from port to port depending on the type of facility and transfer leg used.

For the tanker leg, only one basic safeguard is established, the requirement that tankers using U.S. deepwater ports have double bottoms. For the port module, provision is made for curtains, screens, and other devices for preventing and containing a spill and booms, skimmers, and launches for cleaning up a spill once it occurs. These devices are essentially the same for the sea island and artificial island. Devices for prevention and containment of minor spills are not likely to be effective at a monobuoy and are, therefore, omitted. Environmental safeguards also vary with the type of transfer leg assumed. Double bottoms are required for tug-barges and small tankers. Also, for both vessels, provision is made for prevention, containment, and clean up of spills at the refinery end of the transfer leg. Provision is also made for storing the dirty ballast generated by tug-barges and tankers either on the island or at on-shore storage facilities. The pipelines at sea are assumed to be buried to EPA specifications and to be equipped with bleeder and block valving systems.

In all instances, we have tried to estimate the incremental cost of environmental safeguards. This has not been easy and, in at least one instance, storage tanks for receiving dirty ballast, it would appear that the Army Corps data on port module costs and the EPA data on environmental costs overlap to some extent.

One major environmental cost is excluded because it is unpredictable. This is the cost of damage to adjacent property because of spillage. The amount of these costs will depend, among other things, on probability of occurrence, currents, weather conditions, and value of the property, and is impossible, at least within the time frame of our study, to predict with any accuracy for each of the alternatives.

SOME GENERAL CONCLUSIONS OF THE STUDY

Let me summarize the more important conclusions of this study.

1. Under most circumstances, the construction of a U.S. deepwater port would result in significant savings to the United States. The dollar amounts of these savings are estimated in the next section. It is sufficient to note here that the amount of these savings per barrel tends to increase with throughput. 30% below existing costs; less when compared to a foreign tanker. However, the cost advantage of a U.S. deepwater port disappears at very low levels of throughput and when vessels serving a U.S. port are required to have double bottoms while vessels serving a foreign port are not. Even under the worst case, however, the differential between the least cost U.S. and foreign port is small.

2. There is a major exception to this first conclusion, however, when U.S. flag is required for tankers docking at U.S. ports while foreign flag is permitted for tankers docking at foreign ports. The flag of the vessels could be the decisive factor in a private decision to opt for a foreign deepwater port. For example, comparing the Long Branch monobuoy with a Canadian sea island and assuming a 6 mbbl/day throughput, use of U.S. VLCCs would convert a 15 percent cost advantage for the U.S. port[11] into an 18 percent cost disadvantage.[12]

TABLE 6.—SAVINGS RESULTING FROM AN EAST COAST U.S. DEEPWATER PORT

[Cents per barrel]

Throughput (million barrels per day)	Worst case [1]	Best case [2]
0.600	−4.0	3.3
.800	−1.6	5.7
1.000	−.2	7.2
1.135	.4	7.8
1.200	1.0	8.4
1.572	3.2	10.5
2.000	5.3	12.7
2.500	6.6	14.0
3.200	7.4	14.8
5.106	8.1	15.5
6.600	9.1	16.5

[1] Tankers serving U.S. deepwater ports are required to have double bottoms while tankers serving foreign ports are not.
[2] For the most part, tankers serving both U.S. and foreign ports are required to have double bottoms.

Source.—Tables 1.1, 2.1, 3.1, 4.1, and 5.1 in the Statistical Appendix. Cost projections above 6 million barrels per day have been based on linear extrapolation of cost functions estimated by simple regression analysis.

TABLE 7.—SAVINGS RESULTING FROM A GULF COAST U.S. DEEPWATER PORT

[Cents per barrel]

Throughput (million barrels per day)	Worst case [1]	Best case [2]
0.600 [3]	−14.2	−4.7
1.400 [3]	−.4	2.7
1.805	−3.6	3.8
2.400 [3]	.1	8.4
3.248	4.0	11.5
4.175	4.6	12.0
6.782	7.7	14.9
10.600	10.0	17.1
10.900	10.1	17.2
14.700	11.1	18.2

[1] Same as in table 6.
[2] Same as in table 6.
[3] Tug barge distribution of crude oil assumed.

Source.—Tables 1.2, 2.2, 3.2, and 5.2 in the Statistical Appendix. Cost projections above 10 million barrels per day are based on linear extrapolation of cost functions estimated by simple regression analysis.

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[11] See Figure 1.

[12] This assumes that crude oil must also be transshipped from Canadian to U.S. ports by U.S. flag tanker. Legislation requiring use of U.S. tankers for 50 percent of oil imports was narrowly defeated by the last Congress. The same legislation has been introduced again in this Congress. Our results suggest that the effect of such legislation may well be to drive oil importers away from both U.S. tankers and U.S. deepwater ports.

3. The reason for this is that, by far, the most important component of total costs is the tanker module. As a result, any factor affecting supertanker costs tends to drive the results of the study. The least cost alternative is often that which permits the most efficient use of VLCCs.

4. The environmental safeguards specified by EPA do not, as a rule, add appreciably to the total costs of oil imports or affect the economics of deepwater port alternatives. A partial exception occurs when supertankers are equipped with double bottoms. Double bottoms account for over 90 percent of total environmental costs and, when required at U.S. but not foreign deepwater ports, reduce considerably the savings to the United States likely to result from a U.S. deepwater port.[13]

5. With one major exception, pipeline distribution provides the least cost means of transferring crude oil from deepwater ports to refineries. Moreover the greater the throughput, the greater the economic benefits from pipeline distribution. The exception is the Gulf Coast port handling less than two million barrels per day. In this case, tug-barge distribution would permit slightly lower total costs. This exception results from the greater dispersion of crude oil demand on the Gulf Coast. In general, the more concentrated this demand, as on the East Coast, the more efficient is pipeline distribution.

6. In comparing locations, certain alternatives appear better than others. For the most part, the least cost East Coast alternative is a Long Branch monobuoy with pipeline distribution to refineries. East Coast alternatives that also show well in our analysis are the Cape May sea island and island, the Raritan Bay sea island and island, and the Cape Henlopen monobuoy, all with pipeline distribution to refineries. In each case, however, the differences in costs are not particularly large. The second best East Coast alternative, the Cape May sea island, typically adds about a penny to the cost of a barrel of crude oil for most levels of throughput, whereas the maximum differential for these sites is no more than 4 cents per barrel. Our analysis suggests, in other words, that factors other than costs are likely to be the dominant considerations in the choice between deepwater port locations.

7. The Long Branch monobuoy ceases to be the least cost alternative when extreme assumptions are made about the effect of weather conditions on the operations of an East Coast deepwater port. In this case, the Cape May sea island, which is naturally protected, tends to be the least cost alternative. However, the cost advantage on the Cape May sea island, relative to the Long Branch monobuoy, is only 2 to 3 cents per barrel for all levels of throughput. Even under the worst possible conditions for the Long Branch monobuoy, the monobuoy still proves to be, in the terms of costs at least, a reasonably attractive alternative.

8. On the East Coast, the choice between port technologies will depend on a number of factors including the weather. In general, however, the monobuoy are favored. By contrast, the monobuoys are clearly preferable in the Gulf of Mexico for all levels of throughput and under all assumptions about weather and tanker utilization. Moreover, the savings resulting from construction of a monobuoy rather than an island are considerably greater, varying between 5.5 and 10 cents per barrel. Of the two monobuoys in the Gulf, our analysis suggests that the Freeport site is to be preferred. However, for reasons given in Section 3, this apparent advantage is more the result of assumptions about the distribution of imported crude oil than any inherent defects of the Bayou LaFourche site. Under real world assumptions both would be advantageous as monobuoy sites. Indeed, there are now serious proposals by industry to build monobuoy systems at both locations.

9. The reason why the sea islands and islands are relatively more competitive in the Atlantic than in the Gulf is that the Delaware and Raritan Bays are well-suited for island construction while the Gulf is not. Both East Coast sites are protected. Neither requires a breakwater, one of the more expensive elements of sea island and island construction. There has been industry interest in a sea island in Delaware Bay. One reason for this may be the impact of the weather on alternative port sites and technologies. However, the industry may also anticipate the federal government's assumption of one of the major costs of sea island construction, dredging. Dredging would not be necessary for the monobuoy alternatives.

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[13] Estimates of this reduction in savings are presented in the next section and the statistical appendix at the end of this paper.

10. In summary, the study favors the monobuoy facilities in both the Gulf and the Atlantic, although in the Atlantic several alternatives to monobuoys would provide nearly the same level of benefits. In both regions, however, the construction of U.S. deepwater ports would, under most conceivable circumstances, result in considerable savings than if imported crude oil were to enter the United States through foreign deepwater ports.

SAVINGS RESULTING FROM A U.S. DEEPWATER PORT

In this last section, we estimate the savings likely to result from U.S. construction of one or more deepwater ports. To do so, we compare the costs of the three foreign ports with the costs of the least cost U.S. alternatives.

For the East Coast, the comparison is reasonably straightforward. The highest anticipated level of throughput, 6.6 mbbl/day, and the concentration of demand on the East Coast would justify no more than one or two port facilities. We have, for this reason, assumed one facility—a Long Branch monobuoy system with pipeline distribution to refineries—for all levels of throughput. We also estimate the savings for the second best U.S. alternative—a sea island inside Delaware Bay near Cape May with pipeline distribution to refineries.

The Gulf Coast is more complex. Here, the maximum level of throughput and dispersion of demand would, most likely, justify several facilities located along the Coast. We have, for this reason, assumed a pair of monobuoy systems, each serving a part of the Gulf Coast market, as well as single monobuoy systems at Freeport and Bayou LaFourche serving the entire Gulf Coast market. To measure the costs of the Freeport and Bayou LaFourche systems combined, we must make some rough adjustments in the transfer module; regional specialization within the Gulf Coast market would permit economies in distributing imported crude oil from the deepwater port to refineries. There is a trade-off, however, between these economies and the additional costs resulting from the duplication of port facilities. For the Gulf Coast we also assume different transfer technologies depending on the level of throughput. For cases involving relatively high levels of crude oil imports, we assume pipeline distribution to markets. For relatively low levels of throughput, we assume tug-barge distribution.

The total cost of each facility, as well as the cost differential of each facility relative to the least cost U.S. facility, are presented in Tables 1.1 through 5.2 in the Statistical Appendix. Each table represents a case considered by the Department of Interior in making its throughput projections. Table 1.1 presents the cost data for East Coast throughput under Case I; Table 1.2, for Gulf Coast throughput under Case I. Similarly, Table 2.1 presents East Case throughput under Case II; Table 2.2, Gulf Coast throughput under Case II. In one instance, Case IV, the level of throughput for the Gulf Coast is too small and of too short a duration to justify building a deepwater port. We have, for this reason, omitted Table 4.2.[14]

Several conclusions can be drawn from these data.

1. In most cases, the U.S. deepwater ports result in significant cost savings. The exceptions occur only at very low levels of throughput and, at the same time, where VLCCs serving U.S. ports are required to have double bottoms, while tankers serving foreign ports are not.

2. The cost savings for various levels of throughput are converted to cents per barrel and summarized in Tables 6 and 7. It is clear from the data presented in these tables that these savings increase significantly with throughput. There are, in other words, substantial economies of scale from using a U.S. deepwater port.

3. In general, the Long Branch monobuoy with pipeline distribution to refineries would, in all cases and at all levels of throughput, provide the least cost alternative on the East Coast. Assuming full environmental safeguards at both U.S. and foreign ports, the cost savings resulting from the

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[14] With one exception, we assume the same technologies throughout. The exception is Case V for the Gulf Coast (Table 5.2). Here, because the level of throughput is rather small for the entire lifetime of the monobuoy system, we assume tug-barge distribution of product and exclude the Freeport and Bayou LaFourche facilities combined.

best East Coast alternative would range between 3.3¢ per barrel for 0.6 mbb/day and 16.5¢ per barrel for 6.6 mbbl/day. Only at throughput levels considerably below 0.6 mbbl would the Long Branch monobuoy be at a cost disadvantage relative to a foreign port.

4. By contrast, the Gulf Coast offers an array of "best" alternatives. For low levels of throughput (less than one m bbl), it would not pay to build a U.S. deepwater port. For higher levels of throughput (between one and two mbbl), it would pay to build one Gulf Coast monobuoy system with tug-barge distribution to refineries.

At still higher levels of throughput (between 2 and 5 mbbl) it would pay to build one monobuoy system with pipeline distribution. Finally, at the highest levels of throughput (above 6 mbbl), a combination of monobuoy systems with pipeline distribution to mainland refineries would provide the least cost option. In the Gulf Coast, for the levels of throughput considered, savings under the best of assumptions would range between 2.7¢ per barrel for 1.4 mbbl/day and 18.2¢ per barrel for 14.7 mbbl/day. The only instance in which a Gulf Coast deepwater port faciilty might not be built on the basis of costs, aside from Case IV, is Case V. Here the savings are small throughout and, for much of the monobuoy's lifetime, may even be negative.

5. A major determinant of what type of deepwater port should be built, and even whether a U.S. deepwater port should be built at all, will be the level of throughput for much of the facility's anticipated lifetime. This finding underlines the importance of accurate demand projections from the start. Because the principal variants in these projections are assumptions about changes in U.S. government policies concerning the pricing of natural gas and the exploitation of the outer continental shelf, this also indicates the importance of firm decisions on these issues being made by the government as soon as possible.

6. In any event, the penalties from building a deepwater port under false assumptions about throughout are generally not that great, even in the Gulf Coast region, while the rewards could be substantial. In short, our analysis suggests that, on the basis of costs, an argument can be made for building deepwater port facilities on both the East and Gulf Coasts.

STATISTICAL APPENDIX

TABLE 1.1.—CASE I: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
1.135 million barrels crude per day:						
Long Branch, monobuoy, pipeline	382.2	----------	419.2	----------	419.2	----------
Cape May, sea island, pipeline	390.9	8.7	432.2	13.0	432.2	13.0
Canada, sea island, tanker	410.8	28.6	420.9	1.7	451.4	32.2
Bahamas, sea island, tanker	417.1	34.9	424.4	5.2	454.9	35.7
1.572 million barrels crude per day:						
Long Branch, monobuoy, pipeline	514.9	----------	563.5	----------	563.5	----------
Cape May, sea island, pipeline	521.8	6.9	575.7	12.2	575.7	12.2
Canada, sea island, tanker	568.8	53.9	581.6	18.1	624.7	60.5
Bahamas, sea island, tanker	578.2	63.3	588.5	24.9	630.9	67.3
2.500 million barrels crude per day:						
Long Branch, monobuoy, pipeline	799.4	----------	872.2	----------	872.2	----------
Cape May, sea island, pipeline	813.0	13.6	893.2	21.0	893.2	21.0
Canada, sea island, tanker	913.7	114.4	932.5	60.3	1000.0	127.9
Bahamas, sea island, tanker	926.9	127.5	944.2	72.1	1011.8	139.7

TABLE 1.2.—CASE I: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERFING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
1.305 million barrels crude per day:						
Freeport, monobuoy, pipeline	671.5	----------	727.3	----------	727.3	----------
Bayou LaFourche, monobuoy, pipeline	713.0	41.5	765.0	37.8	765.0	37.8
Freeport-Bayou LaFourche combined	702.8	31.3	765.6	38.3	765.6	38.3
Bahamas, sea island, tanker	686.9	15.4	703.5	−23.8	752.2	24.9
3.248 million barrels crude per day:						
Freeport, monobuoy, pipeline	1137.4	----------	1237.2	----------	1237.2	----------
Bayou LaFourche, monobuoy, pipeline	1175.9	38.5	1270.0	32.8	1270.0	32.8
Freeport-Bayou LaFourche combined	1176.1	38.7	1283.0	45.7	1283.0	45.7
Bahamas, sea island, tanker	1251.0	113.6	1285.3	48.0	1373.1	135.8
10.900 million barrels crude per day:						
Freeport, monobuoy, pipeline	3713.4	74.3	4025.0	42.0	4026.0	42.0
Bayou LaFourche, monobuoy, pipeline	3710.8	71.7	4022.7	43.3	4022.7	43.3
Freeport-Bayou LaFourche combined	3639.1	----------	3984.0	----------	3984.0	----------
Bahamas, sea island, tanker	4259.6	620.5	4386.1	402.1	4670.0	686.0

TABLE 2.1.—CASE II: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
3.505 million barrels crude per day:						
Long Branch, monobuoy, pipeline	1109.8	----------	1209.7	----------	1209.7	----------
Cape May, sea island, pipeline	1114.4	4.6	1222.4	12.7	1222.4	12.7
Canada, sea island, tanker	1275.0	165.1	1298.8	89.1	1393.6	183.9
Bahamas, sea island, tanker	1293.6	183.8	1318.2	108.5	1412.9	203.3
5.106 million barrels crude per day:						
Long Branch, monobuoy, pipeline	1592.9	----------	1741.3	----------	1741.3	----------
Cape May, sea island, pipeline	1616.0	23.1	1770.2	28.9	1770.2	28.9
Canada, sea island, tanker	1856.4	263.5	1892.6	151.3	2030.6	289.3
Bahamas, sea island, tanker	1891.2	298.3	1927.9	186.6	2061.5	320.2
6.600 million barrels crude per day:						
Long Branch, monobuoy, pipeline	2047.1	----------	2239.8	----------	2239.8	----------
Cape May, sea island, pipeline	2078.1	30.9	2276.0	36.2	2276.0	36.2
Canada, sea island, tanker	2411.5	364.4	2459.6	219.8	2638.0	398.2
Bahamas, sea island, tanker	2457.6	410.4	2506.3	266.5	2678.1	438.3

TABLE 2.2—CASE II: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
1.805 million barrels crude per day:						
Freeport, monobuoy, pipeline	671.5	----------	727.3	----------	727.3	----------
Bayou LaFourche, monobuoy, pipeline	713.0	4.15	765.0	37.8	765.0	37.8
Freeport-Bayou LaFourche combined	702.8	31.3	765.6	38.3	765.6	38.3
Bahamas, sea island, tanker	686.9	15.4	703.5	−23.8	752.2	24.9
3.248 million barrels crude per day:						
Freeport, monobuoy, pipeline	1137.4	----------	1237.2	----------	1237.2	----------
Bayou LaFourche, monobuoy, pipeline	1175.9	38.5	1270.0	32.8	1270.0	32.8
Freeport-Bayou LaFourche combined	1176.1	38.7	1283.0	45.7	1283.0	45.7
Bahamas, sea island, tanker	1251.0	113.6	1285.3	48.0	1373.1	135.8
10.600 million barrels crude per day:						
Freeport, monobuoy, pipeline	3612.9	70.5	3917.1	39.1	3917.1	39.1
Bayou LaFourche, monobuoy, pipeline	3611.6	69.2	3915.0	37.0	3915.0	37.0
Freeport-Bayou LaFourche combined	3542.4	----------	3878.0	----------	3878.0	----------
Bahamas, sea island, tanker	4141.8	599.4	4264.6	386.6	4540.8	662.8

TABLE 3.1—CASE III: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
1.135 million barrels crude per day:						
Long Branch, monobuoy, pipeline	382.2	----------	419.2	----------	419.2	----------
Cape May, sea island, pipeline	390.0	8.7	432.2	13.0	432.2	13.0
Canada, sea island, tanker	410.8	28.6	420.9	1.7	451.4	32.2
Bahamas, sea island, tanker	417.1	34.9	424.4	5.2	454.9	35.7
1.572 million barrels crude per day:						
Long Branch, monobuoy, pipeline	514.9	----------	563.5	----------	563.5	----------
Cape May, sea island, pipeline	521.8	6.9	575.7	12.2	575.7	12.2
Canada, sea island, tanker	568.8	53.9	581.6	18.1	624.7	60.5
Bahamas, sea island, tanker	578.2	63.3	588.5	24.9	630.9	67.3
2.500 million barrels crude per day:						
Long Branch, monobuoy, pipeline	799.4	----------	872.2	----------	872.2	----------
Cape May, sea island, pipeline	813.0	13.6	893.2	21.0	893.2	21.0
Canada, sea island, tanker	913.7	114.4	932.5	60.3	1000.0	127.0
Bahamas, sea island, tanker	926.9	127.5	944.2	72.1	1011.8	139.7

TABLE 3.2—CASE III: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
4.175 million barrels crude per day:						
Freeport, monobuoy, pipeline	1467.6	----------	1503.2	----------	1503.2	----------
Bayou LaFourche, monobuoy, pipeline	1481.3	13.7	1604.7	11.5	1604.7	11.5
Freeport-Bayou LaFourche combined	1479.2	11.6	1604.6	11.4	1604.6	11.4
Bahamas, sea island, tanker	1617.2	149.6	1663.2	70.0	1775.3	182.2
6.782 million barrels crude per day:						
Freeport, monobuoy, pipeline	2333.8	25.7	2531.0	4.0	2531.0	4.0
Bayou LaFourche, monobuoy, pipeline	2354.9	46.8	2548.5	21.5	2548.5	21.5
Freeport-Bayou LaFourche combined	2308.1	----------	2527.0	----------	2527.0	----------
Bahamas, sea island, tanker	2641.9	333.8	2718.5	191.5	2895.6	368.6
14.700 million barrels crude per day:						
Freeport, monobuoy, pipeline	4986.5	123.1	5405.5	77.8	5405.5	77.8
Bayou LaFourche, monobuoy, pipeline	4966.6	103.2	5386.6	58.9	5386.6	58.9
Bayou LaFourche, monobuoy, pipeline	4863.4	----------	5327.7	----------	5327.7	----------
Freeport-Bayou LaFourche combined	5752.9	889.5	5925.1	597.4	6306.7	979.0
Bahamas, sea island, tanker						

TABLE 4.1.—CASE IV: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

Throughput/facility	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
2.000 million barrels crude per day:						
Long branch, monobuoy, pipeline	640.8	----------	700.4	----------	700.4	----------
Cape May, sea island, pipeline	645.9	5.1	711.8	11.4	711.8	11.4
Canada, sea island, tanker	723.5	82.8	739.0	38.6	793.1	92.7
Bahamas, sea island, tanker	736.1	95.3	749.2	48.8	803.2	102.8
1.200 million barrels crude per day:						
Long Branch, monobuoy, pipeline	401.6	----------	440.3	----------	440.3	----------
Cape May, sea island, pipeline	410.1	8.5	453.2	12.9	453.2	12.9
Canada, sea island, tanker	434.3	24.2	444.8	4.5	477.1	36.7
Bahamas, sea island, tanker	441.1	39.5	448.8	8.5	481.1	40.7
3.200 million barrels crude per day:						
Long Branch, monobuoy, pipeline	1010.2	----------	1101.4	----------	1101.4	----------
Cape May, sea island, pipeline	1022.9	12.7	1122.5	21.0	1122.5	21.0
Canada, sea island, tanker	1165.3	155.1	1187.6	86.2	1274.1	172.7
Bahamas, sea island, tanker	1182.3	172.1	1204.7	103.2	1291.2	189.8

TABLE 5.1.—CASE V: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE EAST COAST MARKET

[Millions of dollars]

	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
Throughput/facility	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
1.000 million barrels crude per day:						
Long Branch monobuoy pipeline	335.3	....	368.8	....	368.8	....
Cape May, sea island, pipeline	343.9	8.5	380.3	11.5	380.3	11.5
Canada, sea island, tanker	358.9	23.5	368.1	−0.7	394.9	26.1
Bahamas, sea island, tanker	364.3	29.0	370.7	1.9	397.5	28.7
0.600 million barrels crude per day:						
Long Branch, monobuoy, pipeline	212.7	....	234.0	....	234.0	....
Cape May, sea island, pipeline	220.8	8.1	244.5	10.5	244.5	10.5
Canada, sea island, tanker	219.7	7.0	225.2	−8.8	241.3	7.3
Bahamas, sea island, tanker	222.3	9.6	226.2	−7.8	242.3	8.3
0.800 million barrels crude per day:						
Long Branch, monobuoy, pipeline	274.0	....	301.4	....	301.4	....
Cape May, sea island, pipeline	282.3	8.3	312.4	11.0	312.4	11.0
Canada, sea island, tanker	289.3	15.3	296.7	−4.7	318.1	16.7
Bahamas, sea island, tanker	293.3	19.3	298.5	−2.9	319.9	18.5

TABLE 5.2.—CASE V: EQUIVALENT ANNUAL COSTS OF DEEPWATER PORTS SERVING THE GULF COAST MARKET

[Millions of dollars]

	No environmental safeguards		Safeguards in United States only		Safeguards at foreign ports also	
Throughput/facility	Total cost per year	Differential	Total cost per year	Differential	Total cost per year	Differential
1.400 million barrels crude per day:						
Bayou LaFourche, monobuoy, tug barge	512.5	....	563.2	....	563.2	....
Freeport, Monobuoy, tug barge	513.9	1.4	563.7	0.5	563.7	0.5
Bahamas, sea island, tanker	528.5	16.0	541.0	−22.2	576.9	13.7
0.600 million barrels crude per day:						
Bayou LaFourche, monobuoy, tug barge	235.4	....	261.3	....	261.3	....
Freeport, monobuoy, tug barge	227.5	−7.9	251.6	−9.3	251.6	−9.7
Bahamas, sea island, tanker	225.0	−10.4	230.1	−31.2	246.1	−15.2
2.400 million barrels crude per day:						
Bayou LaFourche, monobuoy, tug barge	858.9	....	940.5	....	940.5	....
Freeport, monobuoy, tug barge	867.4	8.5	956.4	15.9	956.4	15.9
Bahamas, sea island, tanker	925.5	66.6	949.5	9.0	1014.4	73.9

I. Monobuoy, especially, is also environmentally optimal; we must look at alternatives.

A. Present:

1. Many small vessels.

2. Out-of-date; leaky; single-bottoms.

3. Coming into on-shore ports.

a. Greater risk of collision.

(1) With other vessels.

(2) With bridges.

b. Greater risk of grounding

c. Greater congestion generally

B. Would be no different if an off-shore deepwater port were used.

C. Deepwater port (especially monobuoy) would be far better environmentally.

1. Far out at sea—10 to 40 miles

2. Connected by pipeline to on-shore storage—safest form of transmission with modern systems.

3. Limited risk of grounding and collision.

4. Modern vessels; double-bottoms and other spill-prevention devices.

II. Third alternative—no imports at all.

A. Would lead to even provisions—short-run shortages.

B. Also worse problems of allocation.

III. We need imports; let us bring them in in the most efficient and environmentally sound manner. To do this, we need legislation authorizing deepwater ports.

Mr. DOWNING. Dr. Johnson, you are an expert on energy, or lack of it.

In your opinion, are we in truth facing an energy shortage in the reasonably near future?

Mr. JOHNSON. We are facing an energy shortage. I think that it has been exaggerated. I do not think we are facing a situation where there will be hundreds of thousands of automobiles stranded on the road, or 90-cent-per-gallon gasoline, as some have alleged.

I think the shortages this year are going to be less severe than the shortages next year; the shortages next year will be less severe than shortage the following year. Perhaps by 1976. if we take the measures required, including authorization of deepwater port construction, then I think we are going to see an improvement.

What we are going to have this year will be spot shortages. There will be parts of the country where distribution is inadequate, where it will take some time to get off supplies into an area, and where there will be shortages. I do not think we will see widespread shortages.

Mr. DOWNING. Exactly why are we having a shortage? Are we getting any less oil this year than we did last year?

Mr. JOHNSON. No. The answer to your second question is essentially no.

There are some refineries that are producing less, but overall, they are actually producing slightly more.

The answer to your first question is very complex. Our present energy difficulties are a result of a combination of factors including the failure to explore for and produce natural gas. This, I think, is largely due to unwise regulations of the gas industry which have resulted in a shift by consumers from gas to oil.

Our air quality standards have resulted in a shift from coal to oil, particularly by the utilities, and particularly on the East Coast and in some of the Central States.

The result has been a very sharp increase in demand for oil at a time when, for a number of reasons, we have not made investments in oil. Also, for one reason or another, we have actually discouraged, through some of our policies, investment in the oil industry.

For example, one of the factors that has caused difficulties has been uncertainties about environmental standards. Engineers who are charged with designing refineries have faced uncertainties about lead standards. There have also been uncertainties about the location of refineries. Several oil companies have tried to locate in particular areas and particular States, and after a rather long and difficult battles, have failed in the face of local resistance to refineries.

Another factor that has contributed to the slowdown in refinery construction has been the uncertainties that had existed, at least until the President's energy message, about the oil import program. Increasingly, over time, it has become apparent that we are going to have to rely more and more on foreign crude oil, at least in the short run. This meant that an import program which was once designed to encourage domestic production became, instead, a program that actually discouraged it. No company would build a refinery on the premise that, maybe, some bureaucrat might authorize the amount of crude oil needed to run that refinery.

The companies have had some difficulties drilling for oil on the Continental Shelf. Our problems are, in short, a result of a very complex set of reasons.

Mr. DOWNING. Is foreign oil readily available to this country if we had the means to transport it?

Mr. JOHNSON. It depends on the oil you are talking about. The crude oil that is in low supply is low sulphur crude oil, also called sweet crude oil.

Unfortunately, this is not readily available. This is the type of crude oil a number of refineries in the United States are designed to use.

High sulphur crude, or sour crude, is more readily available, and there is, I think, every expectation that we will be able to import high sulphur crude oil, particularly from the Persian Gulf area over time.

Mr. DOWNING. Why is not the high grade crude oil available to us?

Mr. JOHNSON. Nature is just not that generous. Low sulphur crude oil is found only in very few areas of the world. The United States has much of it.

Canada has low sulphur crude oil, but is concerned about depletion of its own reserves, and is cutting us back in order to preserve its own stocks of oil.

It is also found in Libya. There are problems with Libya, as you know.

It is also found in Abu Dhabi, but there is not that much there.

It is also found in Indonesia where the Japanese have outcompeted us, pricewise. The price of Indonesia crude is very high.

Mr. DOWNING. How much oil does the world have left?

Mr. JOHNSON. I cannot give you a precise figure. But in terms of proven reserves it is ample. In terms of suspected reserves it is very substantial.

Mr. DOWNING. Well, in view of our increasing demands for energy, you still say that the reserves are substantial?

Mr. JOHNSON. Yes, I think for the near term. During the next 10 to 15 years that is true.

The problem, incidentally, is less that reserves of all types of oil are limited than that we have failed to develop these reserves.

We have them in the United States. We have, for example, oil shale which at some point in time will be able to provide us with substantial amounts of oil. The price must be high enough.

Mr. DOWNING. If we build these new superports and the new tankers, will there be oil there for us to import into these superports?

Mr. JOHNSON. High sulphur crude, yes.

Mr. DOWNING. Our refineries will have to change to accommodate the high sulphur fuel?

Mr. Johnson. No. A number of our refineries, particularly those in the coastal areas, we built with the thought in mind of utilizing foreign crude oil. They are capable of using high sulphur crude. Many of the refineries inland are not.

Mr. Downing. Can you accommodate us for another vote, Dr. Johnson?

Mr. Johnson. Sure.

Mr. Downing. The Committee will recess for 10 minutes.

[Short recess.]

The Chairman. The Committee will come to order.

We will stay here again until those bells ring and then go over again, but we will use this time to advantage.

Anyway, Dr. Johnson, getting back to what you were discussing about the shortage with such calculated shortage of refineries in gasoline, to your knowledge, has there been any pressure on the automobile manufacturers to build smaller and less powerful cars and give the U.S. public a little more and better selection of domestic small cars?

Mr. Johnson. The primary pressure that is going to be placed on the automobile manufacturers to produce a smaller car, and one that will consume less gasoline, is going to be consumer pressure. And we already see in the last month or so that consumer patterns are changing toward demanding less gas-guzzling vehicles. As the public becomes more and more aware of the fact that the larger 1973 vehicles are getting, let us say, 8 miles to the gallon, and that there is a risk of running out of gasoline and not being able to find a gasoline station open on Sunday night, the demand for smaller vehicles will grow. That is the primary pressure.

As we become more and more aware of conservation generally, both inside and outside the Government, I think there is going to be increasing pressures on the automobile companies.

The Chairman. There has not yet been the pressure on the automobile manufacturers because there is not as much selection with the smaller cars, and we run the risk then of the consumer having to go to the imports rather than our own domestic sedans.

Mr. Johnson. But I cannot think of anything that is more likely to get the American manufacturer to think about building a greater variety of smaller cars than if he is going to lose his market to imports.

The Chairman. Have any studies been made, from a land availability viewpoint as to the relative advantage of expanding the refinery capacity in areas where such facilities are presently located, as contrasted to creating refinery capacity in new locations, particularly in areas of present and potential demand for finished petroleum products, but without refinery facilities?

Mr. Johnson. There have been a number of studies, some by companies interested in locating refineries. There is probably no one prescription or answer to what is the optimal location for refineries.

In some cases it may be close to existing market areas. In other cases not.

I do know of a study that has been done for the Council on Environmental Quality that looks at land use primarily from the environmental point of view which concludes that it would be better to disperse refineries rather than concentrate refineries in areas where they are now. The study finds that the air and water in new areas could better discharge any effluents that might occur.

The CHAIRMAN. You mentioned that the refineries in the Midwest were geared to refine the oil found here in this country but not with the imported oil.

To your knowledge, have they begun changing their methods?

Mr. JOHNSON. It is very expensive to convert. To handle high sulphur crude you have to have a refinery that is built with alloy steels, and to convert an existing refinery to a high sulphur crude oil-using refinery could cost a substantial amount. It actually approaches the cost of building a new refinery itself.

Now, there are ways of desulphurizing crude oil, that is of taking the sulphur out before it goes into a refinery, but they, too, are very expensive. The answer here is to make the low sulphur crude oil that is available in the United States go around more efficiently.

We have a problem in our country in that some refineries that are utilizing low sulphur crude oil need not use this type of oil they could use a higher sulphur crude, but they are using low sulphur crude for one or two reasons.

One of these reasons is air quality standards. Various States and local communities require refineries to use low-sulfur crude to maintain these standards. This is particularly true on the east coast of the United States.

Also, given the present cost structure of crude oil, and particularly the nature of the price controls that have been established, it does not pay a major oil company to import high-sulfur crude oil and exchange it for domestically produced low-sulfur crude oil with an inland refinery. This is the way the system used to work. At the present time, if a major oil company would do this it would lose money. A number of majors do not want to do this.

We have been working with the Cost of Living Council, trying to persuade the Cost of Living Council, that in the interest of keeping inland refineries operating at 100 percent of capacity, it is necessary to have an expanded reseller rule to enable the major oil companies to recoup the actual costs of the low-sulfur oil they are giving up, the replacement cost for that type of oil, and, in this way, to give them an incentive to share the low-sulfur crude oil with the inland refiners.

The CHAIRMAN. I was wondering what has been done to explore the possibility of building refineries around the islands. I know we have one refinery in St. Croix. The stories have been going out. There is talk about building one in Bermuda over in the Antilles, and some of these other islands.

Has there been any talk about using some of our own controlled islands in that area?

Mr. JOHNSON. Oh, yes. In Puerto Rico there are several refineries and petrochemical operations already.

There is, in addition, an island off of Puerto Rico called Mona Island, which a number of companies have expressed strong interest in. It has a lot of things going for it.

There is a refinery on Guam at the present time, and the refinery is expanding its operations. There is also a refinery in Hawaii.

The Chairman. Guam would be quite a distance.

Mr. Johnson. That is right.

The Chairman. They do need oil I guess on the west coast as badly as they need it on the east coast.

Mr. Johnson. Guam's principal market is the military in the western Pacific, and it is a natural location for the market it serves.

The Chairman. But they are really doing heavy research on that so that we might have them on our own controlled islands?

Mr. Johnson. Oh, definitely.

One of the purposes of the new oil import program, the way it is designed, is precisely to give incentive to the building of refineries in the United States and in the territorial or commonwealth territories or possessions of the United States. There are, I would say, probably five or six very live proposals for building new refineries or expanding existing refineries in these territories.

The Chairman. Are the harbors deep enough there? Would we still have to have offshore ports there to bring in crude oil?

Mr. Johnson. It depends. In Puerto Rico, I believe, the depths are sufficient. The Virgin Islands are not that good. But they are better than in many parts of the east coast and the gulf coast of the United States.

I do not know what the situation is in Guam.

The Chairman. There goes the other bell. We will recess at this time for 10 minutes.

[Short recess.]

Mr. Downing [presiding]. The committee will come to order.

You spent considerable time, I am told, 4 months on this report, Dr. Johnson.

Mr. Johnson. It was about a 4-month effort involving perhaps 8 to 10 departments, branches, or agencies of Government.

Mr. Downing. And you generally concluded that these deep sea ports were necessary if we were to keep up with our energy requirements?

Mr. Johnson. That is right.

Mr. Downing. A week ago I had an opportunity to talk with Dr. Edward Teller who is a noted scientist, and one of those men who invented the atomic bomb back in the old Manhattan days.

Dr. Teller says that this country has got to do something within the period of 10 years to find a new source of energy, and he suggested nuclear fission in clusters placed at very strategic parts around the country.

Did you ever have occasion to talk to him about that?

Mr. Johnson. I have not. But I agree with him. I think we have to develop alternatives to fossil fuels certainly within the next 10 years or be well on the way to finding alternatives to fossil fuels. And I think we will be.

Mr. Downing. Thank you very much, Dr. Johnson.

Mr. Cohen?

Mr. Cohen. Thank you, Mr. Chairman.

Dr. Johnson, I apologize for interruptions. I am not sure I was able to follow all of your testimony, but a couple of points.

I noticed in the study that was prepared either under your direction, or with your supervision that you mentioned Pittston at Eastport, and that you are aware of a proposal to construct a refinery in Eastport.

I wonder if your study deals with that site?

Mr. JOHNSON. Not that particular site. We chose the locations in the study simply as representative of various parts of the country. We also chose these locations on the basis of our access to data on navigation, characteristics of the sea bed, and other features required by deepwater ports.

Mr. COHEN. This is the other question I wanted to ask you.

The study apparently deals more with the depth which would be available for the deepwater ports, but I was wondering if your study also includes tides. There is substantial debate going on about the tides in the Eastport area, particularly as to whether a tanker could turn around in that location.

Mr. JOHNSON. I have to plead ignorance. I know nothing about the Eastport site at all.

Mr. COHEN. You indicated there is a substantial cost factor if we have the tankers come into this country, is that correct? Would that be virtually eliminated if we had to use double bottoms?

Mr. JOHNSON. No, no, not that at all.

What I said was that the cost advantage of a U.S. port could be virtually eliminated if we required double bottoms which foreign countries, like the Bahamas and Canada, did not.

Now, Canada is not likely to allow any vessel that we refuse to come into its ports.

Mr. COHEN. Is that in way of a commitment from them?

Mr. JOHNSON. That seems to be their policy, to insist on essentially the same environmental standards that we do. They have followed us fairly closely.

Let me stress that it is only in the case where there are very unfavorable assumptions for the U.S. alternative that the benefits of the U.S. deepwater port are diminished quite substantially by the requirement of double bottoms. The important point is that, when we made all the assumptions as bad as possible for the U.S. alternative, it still turns out that there is a modest cost saving.

Mr. COHEN. I do not mean to involve you in a local matter right now, but I was interested in your comment that Canada would, in all probability, adopt the same environmental standards that we have.

You may or may not be aware that the action of the Cabinet in Canada in opposition to this particular company that proposes to build a refinery in Eastport because it would be environmentally unsafe for the fishing and recreation in Canada. In addition, there is a considerable controversy going on now as to whether that decision is really motivated by environmental concerns or economic concerns, and they are trying to attract that particular industry into Canada.

Mr. JOHNSON. That is an issue that I cannot say much about. We have had representatives from the New Brunswick Government talk to us. They are very interested in refineries in New Brunswick that would serve the United States with their excess product until such time that the Canadian Government determines that it needs the product for its own consumption. From what I have been told, these refineries should have no difficulty in getting Canadian Government approval.

Mr. COHEN. That brings me back to the point. A charge has been raised that the reason Canada's Cabinet has voted to oppose allowing a particular supertanker to traverse their waters in order to get to Eastport is purely out of economic motives, rather than environmental concerns.

If that were the case, it seems to me it might not be in the best interest of building relationships between this country and Canada if, in fact, that is the motivation.

Mr. JOHNSON. I do not want to get into a discussion of foreign policy. There may be some truth to that allegation, but I simply do not know.

Mr. COHEN. The other thing I would like to follow up on is the Chairman's inquiry about the so-called shortage. The Maine delegation recently met with some representatives of the administration who indicated that the shortage in terms of total gallonage might run in the neighborhood of 1 to 2 percent.

A major cause of the shortage we are experiencing in the current crisis pertains to the distribution you mentioned. Again, I do not want to put you on the spot, but the question I raise is if the case really is one of distribution, our problem is one of distribution, how would a proposal to increase the tax on gasoline affect distribution?

Mr. JOHNSON. Let me see if I understand your question.

Mr. COHEN. There have been some suggestions that perhaps in order to get at the so-called energy crisis is to simply increase the price of gasoline by imposing a 10 cent higher tax. If it is a question of lack of oil distribution, then the tax is not really the way to get around that.

Mr. JOHNSON. Yes and no. I think the problem is both one of supply and distribution.

The supply of gasoline is lower this year than it was last year.

Mr. COHEN. But not significantly.

Mr. JOHNSON. It is not significant, either.

Mr. COHEN. Would you agree with 2 percent?

Mr. JOHNSON. Our estimates are 3 percent. So it is close.

I think that you have to bear in mind, too, another factor. Our demand has risen over the past year or two, so a simple comparison between this and last year understates the deficit we are faced with.

I think we have to undertake conservation measures. We have to cut down on our consumption of gasoline. We will have to do it more next year and even more so the year after in order to be able to get along with the supply that we are going to have in this country. One of the purposes of the tax proposal would be to do precisely that, to discourage pleasure driving that is unnecessary, to encourage car pooling and other measures that would lead to more efficient utilization of automobiles.

Now, I think some cutback is going to be required in consumption. So it is a problem of supply, as well as distribution.

Mr. COHEN. Thank you.

Mr. DOWNING. Madam Chairman?

The Chairman. I have just two more that I did not finish.

In view of the present distribution patterns in the United States as measured against regional demands, do you not think that some of the increased refinery capacity will necessarily gravitate to areas such as New England and the Midwest now relatively undersupplied with such capacity?

Mr. Johnson. Yes; I think that is definitely true. And there is no question that this is the case with some of the new refineries that have been announced or are being considered at the present time. Some 12 or 13 new refineries or expansions of existing refineries have been announced in the last few months following the changes made in the oil import program.

Some of these are located in supply deficit areas. For example, three are located in New England. Several are located in the southeastern part of the United States and on the gulf coast. All are located in coastal areas, but many would supply the Midwest through existing pipelines.

The Chairman. Since one of the asserted advantages for double bottoms as an antipollution design related to the danger of pollution from grounding, why do you assume that double bottoms would be required on deep draft tankers which would not approach the coast closer than possibly the 100-foot contour?

Mr. Johnson. Why would they be required?

The Chairman. Yes.

Mr. Johnson. If they are not required now by legislation, I would hope that they would be, because I think they are important. This is probably the single most important environmental safeguard to assure that, in case there is a grounding, there is adequate protection that there will not be a major oil spill.

They probably would be less necessary further out of sea than they would be if they come closer to shore.

The Chairman. Well, if we would keep the tankers at the offshore ports where the water is deep enough to prevent groundings, would it be necessary out there? I can see how it would be necessary if the shore or the harbor is more shallow.

Mr. Johnson. Double bottoms would be less necessary further out in deeper the water, but it is my guess at least, there would still be instances where the risk of grounding could occur.

It would strike me that, unless there were absolutely zero probability of this occurring, that double bottoms would be an environmental safeguard that would be desirable.

The Chairman. Do you think we could find some way to get agreements that foreign tankers would have to have the same requirements that ours would have?

Mr. Johnson. I think that we, as a Nation, could require that any tankers utilizing U.S. deepwater ports would have to be built with double bottoms.

The Chairman. And a requirement like that would have to be written into the legislation, would it not?

Mr. Johnson. Either that, or the ability of the U.S. Government to establish a requirement like that, yes. I would think that would be desirable.

The Chairman. This was raised at a hearing the other day with the Coast Guard on the regulations that they have tentatively put forth—how do we police the foreign tankers unless we have a definite requirement? It would almost have to be written into the legislation. They simply will not be accepted at these ports unless they meet the requirements applicable to our own tankers.

Mr. JOHNSON. That is one way of putting it.

I would certainly think, though, that we would have to have something in the legislation that would establish U.S. sovereignty as far as guaranteeing that minimal environmental standards are met.

The CHAIRMAN. I would think so.

Mr. Johnson, there is seemingly any error somewhere on your table 5 on the opposite side of page 20, where you have the table "Gulf Coast" and "Percentage to".

The percentages do not add up to 100. They add to 90, and either something has been left out, or one of the ports has been left out.

Mr. JOHNSON. I will check on that. I suspect that a one has been dropped from that table, and I do not know which it is, offhand.

The CHAIRMAN. I think you might check that to be sure if it is an error and it is corrected.

Mr. JOHNSON. Will do.

[The corrected version of table 5 may be found on p. 106.]

The CHAIRMAN. That is all I have right now.

I think you do know your business, and it is refreshing to have some one up here who has made a study you have, and is acquainted with it as well as you seem to be.

Thank you.

Mr. JOHNSON. Thank you.

Mr. DOWNING [presiding]. Mr. Breaux?

Mr. BREAUX. Thank you, Mr. Chairman.

Thank you, Mr. Johnson. As our chairman has indicated, it is a very excellent report, a very exhaustive report, and one that has taken a great deal of time and effort by a number of people, and I commend you for it.

It seems to me that as I glance through it one of the things that you used to determine whether a deepwater port should be built at all is really a determination of what is the level of traffic through a deepwater port facility which would determine the savings to be generated by that deepwater port.

As I understand it we are looking at the energy problem that is causing our country to import approximately up to 15 million barrels of oil per day. It would seem to me that if a deepwater port is constructed, that facility would be operating at full capacity between the time it is built to at least through 1985, which would possibly be past the extended life of the deepwater port.

In other words, it looks to me like it would be 100 percent, no matter how we lay it out.

Mr. JOHNSON. Yes, I think you are right.

At that level of throughput, you could have several deepwater ports operating. One of the good things about the monobuoy alternative is that it is highly divisible. A monobuoy can operate efficiently at one or two million barrels a day. So, at 15, you can have, let us say, ten monobuoys at different locations that would serve various parts of the United States. There would be ample demand.

There is something else which I think you have to bear in mind. While we are going to be producing more oil in the next 10 years, our total amount of imports probably will not fall absolutely.

We are still going to have, for a number of years, a very substantial level of imports into the United States of crude oil, even after we start producing additional barrels in the Gulf Coast or other oil producing areas of the country.

Mr. BREAUX. Let us assume, Dr. Johnson, for the sake of argument that we find that the construction of a deepwater port is not going to save our industry one single dime economically.

Would not the deepwater port facilities still be a practical, feasible project in light of the fact that they would probably provide better docking facilities and probably reduce the chance of collision and probably reduce the chance of possibility of oil spillage apart from the economic factor?

Mr. JOHNSON. Yes; it stands on its own two feet, both economically and environmentally.

As I indicated earlier, one of the fortuitous results of this study are the parallel study done by CEQ, is that we reached the same answer, that what was environmentally optimal was also economically optimal.

Mr. BREAUX. Let me ask you this: Assuming that by 1985 or a few years after that we come up with a suitable alternative to fossil fuel; what happens to our deepwater ports then?

Mr. JOHNSON. The average deepwater port is going to have an economic lifetime of, let us say, 15 to 20 years or something like that. The average supertanker has a 20-year life span. I certainly foresee our use of oil through the next 15 or 20 years. Even when we do find a suitable substitute for fossil fuels, it will be a number of years before that substitute will become dominant.

Nuclear power today, provides a very small fraction, less than 1 percent, of our energy needs, even though the first Manhattan project experiments occurred during World War II, only 10 percent of our total energy supply in 1980 will come from nuclear power.

It will take a while for the alternative sources of energy to phase in. Because of this, there will still be a substantial demand for deepwater ports up to the year 2000 and beyond.

Mr. BREAUX. One final question.

Mr. Johnson, in your report and study, you discuss the possibility of two deepwater ports for the gulf coast area.

Could you address yourself as to why you are considering two deepwater ports in what is apparently a congested area?

Mr. JOHNSON. Yes; this is partly due to the nature of the industry and the nature of the study.

We had to make a number of assumptions throughout, and some of these assumptions were fairly rigid, generally, one must assume a minimum throughput of, let us say, 1 million barrels a day to build a deepwater port.

On the gulf coast there will be imports far in excess of 1 million barrels a day. Now, you can bring all the crude oil into one deepwater port facility and distribute it by pipeline to the other parts of the gulf coast. However, a more efficient alternative, once you achieve fairly large levels of throughput, and I forget the exact break-even point, would be to build two and possibly more than two deepwater ports and have each serve a major consuming area of the gulf coast.

Given the distribution of refineries on the gulf coast, one port off the coast of Texas and one off the coast of Louisiana would appear to be most economic at this time. Incidentally, it is not surprising to me that there are two proposals for deepwater port facilities, the Loop project off the coast of Louisiana and the Sea Dock proposal off the coast of Texas. That is exactly what our study suggests.

There is enough import demand to support several ports there, each serving a particular area of the gulf coast.

Mr. Breaux. Thank you.

Mr. Downing. Dr. Johnson, the chief counsel has a question for you.

Mr. Corrado. Thank you, Mr. Chairman.

Dr. Johnson, we have another problem, another oil problem somewhat related to this.

Last year, we had a bill which required 50 percent of the oil coming in under the oil import program to go in U.S.-flag bottoms.

Now, this year, we have another bill that would require 20 percent and up to 25 percent in 1973 and 30 percent in 1977, of all petroleum products imported into the country to go in U.S.-flag bottoms.

Of course, the oil import quota program has been eliminated or is being phased out, but could you give us a brief explanation and if necessary, an explanation in greater detail for the record as to what the program for the importation of oil will be in the future?

Mr. Johnson. Surely; basically, what we are doing, is removing all volumetric quotas on imports. It is becoming clear to us, and I think to many people both inside and outside the Government, that now that we have to rely on imported oil, where you have volumetric quotas, you create massive uncertainty about the availability of supply. This is discouraging, among other things, investment in refineries, both in expansion of existing refineries and construction of new refineries in the United States.

At the same time, we wanted to create sufficient incentives for long-term investment in production in the United States. For this reason we substituted a system of license fees for the quota system that was done away with.

Now, anyone can import oil into the United States if he is willing to pay an escalating license fee over a period of time. That fee has been designed, in the long run, to create sufficient incentives. Only time will tell whether we have succeeded in encouraging the domestic construction of refineries either in the United States or U.S. territories and, at the same time, the domestic exploration and drilling for crude oil in the interest, primarily, of assuring that we do not become excessively dependent on foreign sources and, in this way, undermine the various security interests of the United States.

We also recognized that there were many distortions created by the old system and many hardships that would be created by switching overnight from the old to a new system. So, we built into the system a number of special provisions which were designed to carry out existing obligations by the U.S. Government and to smooth the period of transition. All of these special provisions will cease to exist over time and will be phased out gradually. The termination date is 1980.

In the end, what we are going to have, we hope, will be a system whereby, simply by payment of the appropriate import license fee, anyone will be able to import oil to the United States. But, it will be at a price that is sufficient to encourage domestic production instead.

Also, everyone will be treated equally. There will be no special deals, no special arrangements which had crept into the old system, and, I think, were very largely responsible for making it so unwieldy and unworkable.

Mr. Corrado. However, the importer would pay the license fee?

Mr. Johnson. Yes, especially after 1980.

Mr. Cohen. If I could intervene and ask a question: Although the oil import quota system has been abolished, you have instituted, in essence, a tariff which you did not mention?

Mr. Johnson. It is similar to a tariff.

Mr. Cohen. In that after 50,000 barrels, is it, a tax goes on or a tariff fee goes on?

Would you explain that?

Mr. Johnson. The 50,000 barrels applies to a special New England provision, and this is a good example of the special type of arrangement that was created in the past.

The deepwater terminal operators in the Atlantic, primarily in the New England area, were granted a special variance under the volumetric quota system which allowed them to import free of quota 50,000 barrels provided it was No. 2 fuel oil and provided it was produced from Venezuelan crude. We extended this provision as a special variance in the license fee system which allows the import of this amount free of license fee for a period of time. It will eventually be phased out.

Mr. Cohen. The only reason I raise this question is because of us in New England feel the New England consumer has paid considerably inflated price for oil compared to the rest of the Nation. And with the abolition of the oil import quota system, that does not seem to be fair, and the substitution of the so-called tariff will not ease the economic situation one bit for the people of New England.

Mr. Johnson. If you will allow me to disagree, sir, I think there is an opportunity for New England, and that is the fact that the license fee on product is substantially less than the license on crude oil. In the long run, the fee on crude oil will not amount to that much.

And for this reason, there is going to be an incentive to build refineries in the United States. As I indicated, there are now at least three proposals to build refineries in New England at the present time. Some are well advanced. Two of these proposals would build refineries in Maine.

The answer to New England's problem, both under the old system and the new system, is to allow refineries to be constructed in New England. There are two fundamental rules. One is that shortages of product have tended to occur in areas that are relatively distant from refineries. As oil companies cut back, they curtail at the end of the pipeline. The other is that the cost of oil products is directly related to distance from the refinery.

The answer under the program is to build refineries, and I would hope that all three proposals will come to fruition, and that there will be ample time in the next 7 years, when the special provision runs out, to build these refineries and get product from them.

Mr. HEYWARD. In connection with other fuel energy sources, when would you foresee a substantial increase in energy from other sources such as, for instance, gasification of coal?

Mr. JOHNSON. It depends on what the source is.

Nuclear power, assuming that there is a lessening of the administrative and environmental obstacles, will come on very strongly. And many of our new powerplants will, hopefully, be nuclear.

As far as some of the other alternatives, they range from near-term commercial possibilities to visions by scientists, and many of these alternatives probably will not be commercially feasible until 1985 or even the year 2000.

I think coal gasification holds out substantial hope for development. There are, at the present time, commercially viable low-Btu gasification techniques. They are suitable for generating power where you have the fortuitous colocation of coal and large consuming centers. There is a great deal of research and development taking place now, much of it by the industry, on high Btu gasification. I do not know what the prospects for this are at the present time, but I do know there is optimism that high Btu gasification will be commercially feasible perhaps in the next 10 years.

Mr. HEYWARD. Will gasification of coal solve the air pollution problems which face coal as a fuel?

Mr. JOHNSON. It will. It is probably one of the greatest prospects for use of our coal deposits. Coal is the most abundant fossil fuel by far, if it could meet the air standards.

Mr. HEYWARD. Would it be fair to say by 1985, with some of these other things perhaps coming on line, that they will take up a larger percentage of our demand, but that the oil quantity, as contrasted to percentage, will probably stay fairly level for 15, 20, or 25 years after that?

Mr. JOHNSON. That is a way one might put it.

Mr. HEYWARD. In connection with the refinery capacity, how close are we to utilizing our full refinery capacity in the country?

Mr. JOHNSON. Very close.

If you are talking about major oil companies, it is virtually 100 percent of effective capacity now.

There is some underutilization of the independent oil refineries related to the problem I discussed earlier, the inability to obtain sweet crude oil.

Mr. HEYWARD. Would you not agree, however, that, if these offshore terminals are approved, their location would be governed by and would also govern, as an interplay, the location of new refineries?

Mr. JOHNSON. That is right.

Mr. HEYWARD. So that actually the economics of the situation would be whichever is the primary mover. The closer you can get to the refinery with the delivered oil, the better you are able to minimize transfer costs to the refineries.

Mr. JOHNSON. That is correct.

Mr. HEYWARD. This morning our witness from the Department of the Interior made a statement that they would not usurp the role of the States in land use planning, and they would not usurp industry's planning role with two exceptions, environmental and safety, as to where these offshore facilities should be located, how big they should be, or how they should be designed.

Now, I do not want to ask you to criticize or agree with that statement, but I would like to ask you this: In any legislation that is produced, should not the permit authority, whether it be one agency or a new port authority or whatever form it may take, have ultimate control, after discussions with States and with industry, as to where these facilities should be located and what the capacity should be designed for?

Mr. JOHNSON. I would certainly think that states would have control, because no deepwater port is of any use whatsoever if it cannot have pipelines going from the port to onshore storage or production facilities. If I were a Governor of a State, I would be loath to allow concomitant onshore facilities if I did not like the port facility that was being built offshore.

I would think that, even if it were not provided in the legislation, the States would still have a strong voice.

Mr. HEYWARD. In your analysis, you indicate that the economic viability, as contrasted to the environmental desirability of these ports would be dependent upon a minimal amount of imports. At some cutoff point, they become economically undesirable.

If we are to decide then how many we need, do we not have to have some pretty firm estimates of how much our increased imports are going to be?

Mr. JOHNSON. True.

Mr. HEYWARD. And if that is so, in the energy policy, which I understand is being developed in some detail right now, how much attention is being given to methods of depressing the demand curve as contrasted to simply satisfying everybody's desire for all the energy they want?

Mr. JOHNSON. You mean in depressing our demand for foreign oil?

Mr. HEYWARD. Demand curve is what I am thinking of.

Mr. JOHNSON. I see.

Mr. HEYWARD. In other words, does our national policy face up to the question of how we can cut down somewhat on this projected increased demand instead of letting it go and simply try to fill in with the excess crude?

Mr. JOHNSON. Yes, it does in several ways.

There has been an enhanced effort to preach conservation by the U.S. Government.

There have been proposals to cut down on the speed limit to perhaps 50 miles an hour on interstate highways as a way of cutting down on gasoline consumption.

The gas tax, which has been mooted and discussed in the press, would have the same effect. An increase in the price would presumably make people think a little more carefully about using an automobile.

Within the Government we have done a number of things that are designed to use more efficiently crude oil or oil products. For example, most important has been a general review by the Department of Defense which consumes, incidentally, about 3 percent of our oil products. There are a number of defense uses that are, perhaps, not too essential. For example, does the National Guard have to use as many vehicles to go to summer camps? Does the Air Force have to have as many training flights? The Department of Defense is making a review of its own use of jet fuel, gasoline and other oil products to minimize any waste that is taking place.

Mr. HEYWARD. Approximately what percentage do the utilities consume of our overall energy demands—that is, fuel?

Mr. JOHNSON. I cannot give you that figure off the top of my head. It is growing very sharply, particularly for oil. The consumption of oil by the utilities is growing very sharply as the utilities move out of coal.

Mr. HEYWARD. And gas?

Mr. JOHNSON. Well, yes, if they are using gas. The larger of the two problems has been movement out of coal. They are moving out of coal and gas because of increasing shortages of gas and environmental requirement, that are encouraging a switch to oil.

Mr. HEYWARD. Are utility demands increasing percentage-wise in the total national demand of energy, or will we maintain the approximately same percentages?

Mr. JOHNSON. It is increasing percentage wise, and it is increasing very sharply as environmental requirements are having to be met.

Let me say two things.

One is that the use of oil to generate electricity is a very inefficient way of using oil. There is something like a 70 percent efficiency loss from the burning of oil to generate electricity. Putting it a little differently, to generate the equivalent amount of Btu's, to burn oil directly would require one barrel; to burn oil indirectly to produce electricity would require four barrels.

We are imposing a very substantial burden on our oil supplies, by forcing utilities to convert from coal to oil, and I think that this is one area where there is opportunity for conservation and slowing down the galloping increase in demand for oil that we are faced with in this country. We might be able to avoid oil shortages with which we are now faced by trying to find ways for the utilities to continue to burn coal.

Mr. HEYWARD. I assume you look at nuclear energy as the best present available method to create a more efficient production of electricity and leave oil where it can be more efficiently used for other purposes?

Mr. JOHNSON. That is right for new plants.

But we are talking here about the conversion of existing plants from coal to oil, which is what has caused a lot of the difficulties.

Mr. Heyward. Thank you.

Mr. Downing. Mr. Rountree?

Mr. Rountree. I apologize coming back to the hearing late, but please tell me if you have responded, and I will stop.

Did you, or have you discussed the question of public versus private financing for the construction of deepwater ports?

Mr. Johnson. Very briefly. In my judgment, and I think it is the judgment of most of the people in Government, there is no reason for the public financing of the deepwater ports. The port facility itself is very inexpensive compared to the total cost of shipping oil to the United States. As far as I know, no company or group of companies has proposed public financing.

Mr. Rountree. In the context of the staffing of the administration's bill, which I understand you played a very professional role—was some sort of public financing or quasi public corporation or other form of Federal Government subsidy, or incentives, discussed.

And, if so, what were they and what was the rationale?

Mr. Johnson. It was in the back of our minds, but it really never was discussed seriously because it was clear to us right from the start that industry was not asking for it; there was no need for doing this.

The costs of deepwater ports are, basically, very low compared to the total cost of shipping oil to the United States. The port is something that the industry can finance quite adequately on its own.

The role of the public sector lies in making sure that the deepwater port facilities meet environmental standards, that they do not interfere with other economic activities in the region, like fishing or shipping and that they comply with the laws of the nation.

Mr. Rountree. Presumably, you have then opted for the more traditional method of port development financing.

Did Treasury or presumably the administration interagency task force established to develop this particular proposal consider the role that the U.S. Government would want to play in evaluating the financial responsibility of a licensee, whether it be a private party or a State entity?

In other words, what do you envisage that the administrating agency would require in the context of the application?

Mr. Johnson. I would think that the actual investment in the facilities would be by a company or group of companies. They would not enter into it unless they had the financial wherewithal. They would certainly not get financing for such a project unless they had it.

Mr. Rountree. Would you require them to post a bond or some other form of guarantee of full faith of performance of the license agreement and if, in fact, for some reason, the licensee was unable to complete construction or desired to withdraw within the terms of the 30-year permit, they would have sufficient capital to comply with the provisions of the administration's bill in removing the deepwater port facility as a hazard to navigation?

Mr. JOHNSON. I do not know the particulars. Let me talk very generally about this.

Mr. ROUNTREE. Some sort of protection of the public interest that would be built in?

Mr. JOHNSON. Certainly, that the facility be removed, for example, so that it would not continue to be a navigational hazard.

Mr. ROUNTREE. My final question, and you can submit this for the record if you desire.

Under the concept of the administration's bill or any legislative proposal, which, in essence, would set up a framework for the licensing procedures for the construction and operation of the deepwater port, what does the Department of Treasury see as their role and as a corollary question to that, exactly what laws administered by the Department of Treasury are impacted by this particular subject matter?

Presumably you have considered it and you have evaluated all the laws. I notice customs and navigation laws administered by the Customs Department do not apply, except in certain circumstances, in the administration bill.

I would like to know why and how you administer all the laws which will be applicable within the U.S. territorial waters.

Mr. JOHNSON. I think you are out of my bailiwick.

Mr. DOWNING. I wonder if you could supply that for the record.

Mr. ROUNTREE. Just for the record.

That is all, Mr. Chairman.

Mr. DOWNING. The Chair recognizes with pleasure one of the ranking members and one of the ablest members of this committee, Mr. Dingell.

Do you have any questions, Mr. Dingell?

Mr. DINGELL. No questions.

Thank you for the kind words.

Mr. DOWNING. Dr. Johnson, you have made an excellent and knowledgeable witness. And I think you have made a contribution to this legislation.

We thank you very much.

If you will, please respond to questions submitted by Counsel as soon as possible.

Mr. JOHNSON. Yes sir, we will be happy to do so.

Mr. DOWNING. The committee will stand adjourned and will meet again on Thursday at 10 o'clock, when the hearings on this legislation will be resumed.

[The questions and answers follow:]

Question 1.—Provide a detailed listing and analysis of all the laws and programs administered by the Department of Treasury which would impact on or be affected by enactment of H.R. 7501 or similar legislation providing for the construction and operation of deepwater ports. Indicate which, if any, of these laws should be specifically amended, repealed, modified, or expanded in the provisions of such legislation.

Answer number 1. The only laws administered by this Department which would be applicable to deepwater port facilities licensed under H.R. 7501 would be those customs and navigation laws specified in section 111(b)(7) of the bill, namely, 46 U.S.C. 7, 289, 316(a), 316(b), 319, 320, and 883, comprising the relevant coastwise laws and the related laws authorizing the remission or mitigation of penalties or forfeitures under them. Section 289, title 46, United States Code, provides that no foreign vessel shall transport passengers between coastwise points, whether directly or by way of a foreign port. Section 316(a), title 46, United States Code, makes it unlawful for any vessel not wholly owned by a United States citizen and having in force a United States document or a certificate of number issued under the provisions of the Federal Boating Act of 1958

(46 U.S.C. 527a(a)) to tow any vessel other then a foreign vessel, or a vessel in distress, between coastwise points, either directly or by way of a foreign port, or to do any part of such towing. Section 316(b), title 46, United States Code, is a definitional section ancillary to section 316(a). Section 319, title 46, United States Code, prohibits vessels entitled to documentation as vessels of the United States, other than registered vessel, from engaging in the coatwise trade or carrying on the fishery without a license. Section 883, title 46, United States Code, prohibits the transportation of merchandise by water, or by land and water, between coastwise points, either directly or via a foreign port, or for any part of the transportation, in a vessel not qualified to engage in coastwise trade. Section 7, title 46, United States Code, authorizes generally the remission or mitigation of penalties or forfeitures provided for in laws relating to vessels. Section 320, title 46, United States Code, authorizes the remission or mitigation of penalties assessed under four specific statutes, including sections 289 and 319, title 46, United States Code, when the offense was not willfully committed.

The application of the above-mentioned laws would reserve the trade between deepwater port facilities and points in the United States to vessels of the United States entitled to engage in the coastwide trade. Their enforcement would not require the presence of a Customs officer at the deepwater port facility. Foreign vessels would be required to report arrival and enter following each arrival within a Customs collection district from a deepwater port facility. American vessels would be required to report arrival and make entry if arriving from a foreign port or place (including foreign vessels or deepwater port facilities on the high seas from which merchandise has been transshipped). And all vessels, foreign and American, would be required to obtain permits before unloading merchandise taken on at the deepwater port facility or transshipped from another vessel there.

The coastwise laws would not apply to transportation between coastwise points which was not in part by vessel, and would therefore not be applicable to the shipment of foreign oil direct to the deepwater port facility and thence by pipeline to the mainland. Since pipeline transfer is generally more efficient, since existing proposals for deepwater port facilities would establish pipeline transfer, and since these proposals contemplate that they would handle exclusively oil or oil products coming direct for foreign sources, the impact of the coastwise laws on the operation of deepwater port facilities is likely to be slight in the short-term future. However, some proposals also consider the possibility of transshipping merchandise at such facilities to smaller vessels for the final leg of the tranportation to the United States and of course the coastwise laws would be applicable to such transportation.

Question 2.—Provide a detailed analysis of exactly what role the Department of Treasury will play upon enactment of legislation such as H.R. 7501 in terms of federal agency responsibility, interagency coordination, and regulation of operation of the deepwater port facility.

Answer number 2. In the general planning for the development of deepwater port facilities provided in H.R. 7501, the Office of the Chairman of the Oil Policy Committee would be involved, as it would be in any basic policy decisions concerning governmental control over the operation of such facilities once they had been established. The Oil Policy Committee was reconstituted by Executive Order 11703, February 8, 1973, 38 F.R. 3579, the basic provisions of which were incorporated into section 7–10 of Proclamation 3279, as amended by Proclamation 4210, April 18, 1973, 38 F.R. 9645, 9652. Under section 2 of the Order (Section 7 of the Proclamation), the Chairman of the Committee is to "provide policy, direction, coordination, and surveillance of the oil import control program established by Proclamation No. 3279," as amended. Section 3 of the Order (Section 8 of the Proclamation) designates the Deputy Secretary of the Treasury as Chairman of the Committee. The authority for Executive Order 11703 is that vested in the President by the Constitution and statutes, including specifically section 10 of the Act of August 8, 1950, c. 655, 65 Stat. 712, 3 U.S.C. 301, while that for the cited Proclamations specifically is section 232 of the Trade Expansion Act of 1962, Pub. L. 87–794, 76 Stat. 877, 19 U.S.C. 1862. In connection with the Deputy Secretary's duties, Treasury Department Order No. 226 dated September 1, 1973, created the Office of National Resources and Energy to advise and assist the Deputy Secretary and coordinate with other Government agencies concerned with resources and energy.

Question 3.—Assuming enactment of H.R. 7501 or similar legislation, provide a five-year cost estimate of the Department of Treasury, in terms of monies and personnel, which would be required to implement Treasury's responsibilities under the Act.

Answer number 3. The Department does not anticipate that it would require any additional monies or personnel for the next five years to carry out its responsibilities under H.R. 7501 if it were enacted.

In addition, the Department would like to take this opportunity to recommend minor technical changes to clarify section 113 of H.R. 7501 with regard to the customs and navigation laws. A Comparative Print showing the suggested changes is enclosed for your convenient reference.

The Department has been advised by the Office of Management and Budget that there is no objection from the standpoint of the Administration's program to the submission of this report to your Committee.

COMPARATIVE PRINT

Changes in section 113 are shown as follows (language proposed to be omitted is enclosed in brackets; new matter is underscored):

SEC. 113. The customs and navigation laws administered by the [Bureau of Customs] *Secretray of the Treasury*, except those *navigation laws* specified in section 111(b)(7) [herein] *of this Act*, shall not apply to any deepwater port faciilty licensed under this Act; but all [materials] *foreign articles to be* used in the construction of any such deepwater port facility and connected facilities such as pipelines and cables shall first be made subject to a consumption entry in the United States and [duties deposited thereon] *all applicable duties and taxes which would be imposed upon or by reason of their importation if they were imported for consumption in the United States shall be paid thereon in accordance with the laws applicable to merchandise imported into the customs territory of the United States.* [However, a] *A*ll United States officials, including [customs officials] *officers of the customs as defined in section 401(i), Tariff Act of 1930, as amended, 19 U.S.C. 1401(i)*, shall at all times be accorded reasonable access to deepwater facilities licensed under this Act for the purpose of enforcing laws under their jurisdiction or carrying out their responsibilities.

[The following information was supplied for inclusion in the record:]

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C. June 1973.

DR. WILLIAM A. JOHNSON,
Energy Adviser to the Deputy Secretary of the Treasury,
Washington, D.C.

DEAR DR. JOHNSON: I was most impressed by your testimony which you submitted before the House Merchant Marine & Fisheries Committee regarding the economics of off-shore oil terminal development.

Time did not permit, however, a discussion of the shore side facilities which would attend the construction of an off-shore oil terminal. I would appreciate it if you could provide for the Record what information you have available about the types of facilities that would necessarily follow our deepwater port development. In addition, it would be helpful if you could estimate for us the thru-put capacity of the various types of facilities that have been proposed. For example, could you provide a comparison between a mono-buoy system and the type of artificial island which was described in the Commerce Department report prepared by Soros Associates.

There has also been advanced the theory that despite the increase in thru-put, that refineries will be able to meet the increased supply for production by expanding and updating their existing facilities. In particular, do you think that refineries at the head of Delaware Bay could expand their production to meet the increased thru-put without acquiring additional land for new facilities?

I regret that we were unable to discuss these matters at greater length during the hearings, but I know that if you will provide some answers to these questions that this will be a valuable contribution to the hearing record.

Again, I want to congratulate you on your fine testimony and I want to thank you in advance for looking into these questions that I have raised.

Sincerely,

PIERRE S. DU PONT,
Member of Congress.

OFFICE OF THE SECRETARY OF THE TREASURY,
Washington, D.C., July 6, 1973.

Hon. PIERRE S. DU PONT,
House of Representatives,
Washington, D.C.

DEAR MR. DU PONT: Thank you for your letter of June 28 and the kind words about my testimony before the House Merchant Marine and Fisheries Committee. In all candor, I was fortunate in having directed the study that formed the basis of my presentation. This provided me with four months of concentrated research and the support of ten agencies of the government in preparing my statement.

Let me answer your questions in order. First, the types of facilities that would follow the construction of a deepwater port would depend on the function of the port and the policies of the state and local governments concerned. The deepwater port facility may be part of a larger program for building a new refinery or petrochemical complex. Or, as is likely to be the case in Delaware, the deepwater port may simply replace existing and outmoded port facilities that are incapable of handling the more efficient and environmentally superior supertankers.

In the letter instance, I can see no reason why additional facilities must be built other than pipelines to the shore, which would connect the port facility with existing refineries and storage areas, or on-shore berthing areas, which would accommodate barges if barges are used to transfer oil to the mainland. Some additional on-shore storage capability may also be built. However, this could be unnecessary if a deepwater port merely replaces existing port facilities. Storage facilities would not be built on shore if the port is an artificial island like that proposed in the Soros Study. One purpose of building the island is to provide space for storage on the island itself.

In any event, I would think that, if a state or local community did not want a port to stimulate the growth of new refinery and petrochemical complex, it can do, as Delaware has done, enact legislation restricting further development.

The Soros Study envisaged an initial capacity of 100 million tons a year for its artificial island, rising, over time, to 300 million tons a year. This is roughly equivalent to 2 and 6 million barrels a day of throughput respectively. By contrast, the monobuoy would involve much less investment and would permit a smaller scale of operations. A monobuoy system would have a throughput capacity of about 1 million barrels a day, although, under most circumstances, this system could operate economically at a throughput as low as 500 thousand barrels a day. The monobuoy systems capacity could be increased beyond 1 million barrels per day simply by adding additional monobuoys and connecting pipelines. The artificial island, unlike the monobuoy, would have substantial economies of scale. A major advantage of the monobuoy system is its divisibility. For this reason, it is possible to construct a number of monobuoys at different points along the coast.

Many refiners can and do increase marginally their output by "debottlenecking". In any refinery, small changes in operations, or small investment in equipment, usually result in as high as a 2% increase in capacity a year. The older the refinery, however, the less the opportunities for debottlenecking. Some refineries also have space which would enable expansion within existing plant sites. Indeed, much of the new capacity that has been announced since the issuance of the President's Energy Message on April 18 would involve expansion of existing refineries rather than the construction of new refineries. Whether adequate space exists at the head of Delaware Bay is a moot question. The answer would vary from refinery to refinery. It is my impression that a few refineries in this area do have an ability to expand their existing operations significantly, while many do not.

I hope that these answers will be of help to you.

Sincerely yours,

WILLIAM A. JOHNSON,
Energy Adviser to the Deputy Secretary.

[Whereupon, at 5 p.m., the committee recessed, to reconvene at 10 a.m., Thursday, June 14, 1973.]

OFFSHORE PORTS AND TERMINALS

THURSDAY, JUNE 14, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:10 a.m., in room 1334, Longworth Office Building, the Hon. Thomas N. Downing presiding.

Mr. Downing. The committee will come to order.

This morning, the committee will resume hearings on H.R. 5091 and H.R. 5898, bills relating to offshore ports and terminals.

We are pleased to have with us again the Honorable Russell E. Train, Chairman, Council on Environmental Quality.

Mr. Train, we are most pleased to have you.

Are there any associates you wish to have identified for purposes of the record?

Mr. Train. Not at this moment, Mr. Chairman. I will proceed by myself.

If I get into real trouble, I will yell for help, and I will identify the help for the record at that time.

Mr. Downing. You may proceed.

STATEMENT OF HON. RUSSELL E. TRAIN, CHAIRMAN, COUNCIL ON ENVIRONMENTAL QUALITY

Mr. Train. I do have a fairly lengthy statement and normally I would simply try to summarize it, but I do believe that this is quite a technical subject and it would be just as well, Mr. Chairman, if I proceed through the statement as submitted to the committee, and with your indulgence, I will read it.

Mr. Downing. This is an important subject, and we consider you a qualified witness.

So, if it is lengthy, so be it.

Mr. Train. Mr. Chairman and members of the committee, I appreciate the opportunity to appear before you on behalf of the Council on Environmental Quality to discuss H.R. 5091 and H.R. 5898, bills relating to the location, construction and operation of deepwater ports and other offshore facilities.

Mr. Chairman, the administration supports the need for new legislation providing for the establishment and regulation of deepwater ports and other offshore facilities.

Furthermore, we recognize that these facilities must be located, constructed, and operated in a manner which would minimize or avoid adverse environmental impacts.

NEED FOR LEGISLATION

The need for such legislation is the result of the recent confluence of two major trends. First, of course, is the trend toward greater oil imports. A second major trend is the shift in oil transport to very large vessels called supertankers.

The draft of these supertankers can range, for example, from 67 feet for a 250,000 deadweight ton tanker to 94 feet for a 540,000 deadweight ton version.

Yet the deepest channel to a convention port on the east and gulf coasts presently is about 45 feet.

Deep inshore locations which could handle the deepest draft supertankers exist naturally at several places in Maine. Elsewhere on the east and gulf coasts, inshore deepwater port facilities would have to be created by dredging existing harbors and channels.

One west coast port, Seattle, can accommodate very deep drafts, but Los Angeles/Long Beach is only deep enough to handle tankers in the 100,000–150,000 deadweight ton range, and San Francisco is even less deep.

Thus, at the present time, almost no U.S. harbor has the capacity to receive and unload the larger supertankers.

The attention of industry, government, and citizen environmentalists has turned, therefore, to the question of how to create facilities to bring the needed oil into the U.S. while, at the same time, protecting against the hazard of oil spills and controlling other environmental impacts of port development.

DEEPWATER PORT FACILITIES ACT OF 1973

The administration's Deepwater Port Facilities Act of 1973, proposed in the President's energy message of April 18, addresses this question.

It recognizes that today there exists no comprehensive institutional or legal framework for dealing with the many issues and problems involved in deepwater port development.

The administration's proposal would provide such a comprehensive system.

Mr. Chairman, I would like to devote the remainder of my testimony to a discussion of the Deepwater Port Facilities Act of 1973—introduced in the House by Representative Saylor and numbered H.R. 7501—in relation to H.R. 5091 and H.R. 5898.

The administration bill would authorize the Secretary of the Interior to license and regulate the construction and operation of deepwater port facilities beyond the 3-mile territorial sea. The bill prohibits the construction and operation of such a facility without such a license.

Applicants for a deepwater port license must demonstrate that the port will not interfere with international navigation or other reasonable uses of the high seas.

The Secretary cannot issue such a license until he determines that the siting and building of the port, and its subsequent operation, will minimize or prevent significant adverse environmental effects. H.R. 7501 recognizes the impact that port location would have on shoreside development and requires the Secretary to consult with Governors of potentially affected States to insure that port induced activities are consistent with States land use programs.

H.R. 7501 would establish a uniform, coordinated procedure for licensing and regulating deepwater ports. The Secretary of the Interior will have prime responsibility, and applicants will have only one place in the Federal Government to go for a decision.

As you know, authority for such a decision is currently fragmented among several Federal agencies.

In his coordinating role, the Secretary will consult with every interested agency on specific applications, as well as on the development of regulations for the licensing program.

I want to emphasize that the administration bill does not modify or reverse existing law covering the safety of navigation or the protection of the marine environment. On the contrary, the bill specifically extends important existing U.S. laws, such as the Federal Water Pollution Control Act, as amended in 1972, and the Ports and Waterways Safety Act of 1972, to the deepwater port facility just as if that facility were located in U.S. navigable waters.

A NEPA statement would precede any decision on a license application.

The administration bill, H.R. 7501, would provide a comprehensive and coordinated method for licensing and regulating deepwater port facilities.

We feel that it is a better bill than either H.R. 5898 or H.R. 5091, and that it deserves this committee's support.

H.R. 5898 is much too brief and fails to recognize or provide solutions for many of the fundamental issues involved in deepwater port development. H.R. 5091 is considerably more comprehensive than H.R. 5898, but is less preferable than the administration approach for a number of reasons.

First, H.R. 5091 would give the Secretary of Commerce certification authority based solely on the impact of the facility on the marine environment. H.R. 7501 recognizes the importance of the marine environment in this question—and provides the authority to protect it.

But deepwater port development deals with important energy and land use issues as well, and a broader-based agency. The Department of the Interior, in our view, is the appropriate administering agency.

Second, we question the one-time nature of a certification approach, provided in H.R. 5091, as contrasted with the licensing and regulatory approach put forth by the administration bill.

H.R. 7501 would require the Secretary to prescribe conditions for operating under the license—including conditions to prevent or minimize pollution of the surrounding waters—and established stiff civil and criminal penalties for violation of the conditions of the license.

The administration bill also provides for revocation or suspension of a deepwater port facility license, including suspension forthwith in the case of a serious threat to the environment.

Finally, in determining that the proposed deepwater port facility will be located, constructed or operated so as to prevent significant adverse environmental effects, the Secretary is also required by H.R. 7501 to consider the effects of the pipelines that would bring oil ashore. H.R. 5091 is silent on pipelines.

ENVIRONMENTAL IMPACTS

Mr. Chairman, as you may know, the council has been conducting a major interagency study of these environmental impacts of deepwater ports. Parts of this study are complete and available to the public.

The remainder of our study should be available by summer's end.

We initiated this study, as I recall, in January 1972, just about 1 and one-half years ago.

This was an initiative of the Council on Environmental Quality, and I mention that because I think it is a good example of the effort of the council to study potential problems with new technologies coming down the road and to analyze their possible environmental impacts well in advance of implementations. I mention that because I think it throws some light on the work of the council.

Mr. Downing. The committee commends the council for that action.

Mr. Train. The environmental effects of deepwater port development can be divided into two broad categories, the primary effects of the construction of the port and of oil spills once the port becomes operational, and the secondary effects of industrialization and development on the shore which would be induced by the location of a deepwater port.

PRIMARY EFFECTS

One of the major environmental risks associated with marine oil transportation is the potential for oil spills resulting from tanker accidents and operations. Other risks stem from the effects of port construction and maintenance particularly if significant dredging is necessary.

Potential environmental impacts from these activities are a function of several factors, the probability of damage occurring in the first place—for example, the need to dredge or the likelihood of an oil spill, the effectiveness of measures to prevent or control the damage, and the vulnerability of any specific port location to whatever damage may occur.

The overall risk of environmental damage will, in large measure, be related to the type of deepwater port facility and its location with respect to critical coastal environmental features.

EFFECTS FROM CONSTRUCTION

The impacts of port construction on the environment are closely related to the amount of dredging or other disturbance of the sea bottom that takes place.

For example, creation of a deepwater port in the Raritan Bay of northern New Jersey would require dredging 8 miles of channel, 90 feet deep and 1,000 feet wide, and another 2 square miles of berthing and maneuvering area. Dredge spoil would total 321 million cubic yards.

The environmental effects of such dredging could include destruction of sea bottom habitat, damage to estuarine marine life caused by increase in turbidity and salinity and intrusion of sea water into fresh water aquifers.

Disposal of dredge spoil would present another environmental problem, particularly if the spoils are polluted.

Further, once dredged, deep channels must be periodically cleared of silt and sand by redredging, a process which is likely to repeat many of the environmental damages just described.

The construction of large artificial islands or breakwaters would also require some dredging. By interfering with normal wave and current patterns, these structures could cause shore erosion under certain conditions, particularly in estuarine or other near shore locations.

Miles out at sea, however, the force such facilities might impose on ocean movements should not influence shoreline processes significantly, if at all.

The construction effects of far offshore type facilities, such as single point moorings or single anchor leg moorings, are likely to be negligible. Pipelines from such facilities, particularly if buried to protect against breaks, will require some dredging that would disturb the sea bottom and coastal areas where the pipelines come ashore.

The amount of this dredging would be insignificant compared with dredging deep channels to existing ports.

OIL SPILL EFFECTS

Oil spills can be caused by casualties such as collisions, groundings, and rammings, by operational mishaps, often due to human failure, during the transfer of oil from tankers to port facilities, and by pipeline breaks or leaks.

Regardless of the source and size of an oil spill, several biological effects can occur. Organisms can be killed outright by toxic components of the oil; they can die or be harmed by direct coating with oil; oil concentrations in the water can inhibit normal feeding or reproductive behavior; certain oil components, especially those suspected of causing cancer, can be incorporated into the food chain; and the covering of rocks, marshes, and similar areas with oil can destroy habitats.

The actual effect of any particular spill will depend upon a series of other factors, including the chemical composition and amount of oil, winds and currents in the region of the spill, the type of marine life in the region of the spill; the season of the year; and previous exposure to oil.

Furthermore, time is an overriding factor in predicting and assessing biological impacts. Over time, as a result of wind and current movement, spilled oil "weathers"; that is, the toxic fractions will dissipate.

A dynamic interaction of the wind, currents, and tides, in conjunction with biological and chemical degradation, determines where the oil will go and what effects it will have en route and when it arrives.

Estuaries and near shore coastal wetlands are the most biologically productive areas of the marine ecosystem and also the most sensitive to damage from either construction or oil spill effects.

At shallow near shore sites, such damage would be unavoidable. At far offshore locations, however, the probability that spilled oil will enter sensitive estuarine areas is much reduced.

In addition, should a spill occur far offshore, and should wind and current move it toward coastal areas, "weathering of the oil enroute will tend to remove its most immediately toxic and lethal fractions. Not only will it take the oil longer to reach sensitive wetland and estuarine areas and recreational beaches, but, under certain wind and current conditions, the oil could move out to sea and never reach the shore as a slick.

PREVENTIVE MEASURES

There are a number of ways to prevent oil spills or to minimize their damage. I have already mentioned the different characteristics of different types of port facilities.

Ports that must be carved out of shallow estuaries or nearshore areas which require tankers to thread their way through narrow channels, often in waters congested with other ships, present risks of collision or grounding.

Mandatory radar-guided vessel traffic controls could reduce those risks. Single point mooring permit the construction of ports far offshore in very deep water without expensive dredging or breakwaters. Such facilities can be located away from congested ports, harbor entranceways, and coastal shipping lanes, thus significantly limiting the probability that collisions will occur.

In naturally deep water, the probability of groundings is also reduced. If supertankers are constructed with double bottoms, thus providing a void between the outside hull and cargo tanks, the amount of oil spilled should a grounding occur is significantly reduced.

Finally, the use of pipelines, as opposed to barges or smaller tankers to transship oil to shore, cuts the number of handling operations and the potential for accidents.

The major environmental disadvantages of single point mooring type facilities as opposed to fixed berth facilities is that, with present technology, little can be done to contain spills during unloading operations.

In a fixed berth, a floating apron can be installed around the stationary tanker to contain any oil that might be spilled.

Since tankers are constantly in motion around single point moorings, aprons are not feasible. Further development and experience with single point mooring technologies will be necessary to alleviate this problem before these facilities come into general use in the United States.

SECONDARY EFFECTS

In the United States, the location of a superport will tend to induce new industries, particularly refineries and petrochemical complexes in the immediate area serving the port and in the surrounding region.

The creation of new petroleum-related industries would induce associated commercial and economic activities. An overall increase in economic development will cause population concentration and needs for new housing and added public services such as sewage treatment, transportation, schools, electric power, and recreational facilities.

Each of the activities, in turn, will result in a range of environmental impacts beyond what would normally be expected without a deepwater port. The impacts include demands for land and water supply, increased air and water pollution, and a burden on public services.

Depending upon the nature of a given area, induced effects could cause it to change from undeveloped to industrialized or from developed to highly industrialized.

A framework of existing Federal legislation can help in planning and controlling superport related development. Under the Federal air and water pollution laws, new industrial development generated by increases in petroleum refining and processing will be subject to stringent standards, reflecting the best available pollution control technology, covering the emission and discharge of pollutants to the air and water.

In addition, these laws require that new facilities be compatible with ambient air and water quality standards. These ambient standards may, in some cases, require more stringent emission and effluent controls than the basic "best available technology" requirements.

This framework of controls should assure that deepwater port related industrial development will occur within the limits of environmental acceptability.

The recently enacted Coastal Zone Management Act and the pending National Land Use Policy Act also provide a framework within which States can control the effects of industrial development upon land use.

Two basic objectives of the President's National Land Use Policy Act are to encourage State control of large scale development of more than local significance, and to protect areas of critical environmental concern, such as coastal wetlands.

The Coastal Zone Management Act, which encourages States to plan and control land use in the coastal zone, is especially applicable because secondary development associated with superports will affect coastal zones in every case.

CONCLUSION

Given the favorable economics of deepwater ports, continuing to receive oil direct from overseas sources in smaller tankers is economically unrealistic. For example, it costs approximately $9 per ton to bring crude oil direct to the U.S. east coast in 50,000 to 70,000 deadweight ton tanker.

That same ton would cost only $6.55 if carried direct in a 250,000 deadweight ton supertanker.

Therefore, the United States is faced with two basic alternatives. Either it can develop its own deepwater ports or it can transship oil from non-U.S. Western Hemisphere deepwater ports in the Caribbean or in the Canadian Maritime Provinces.

From an economic point of view, the choice lies between the cost of $6.55 per ton, for example, if the oil is delivered to the United States by supertankers directly, and from $7.05 to $7.25 per ton if the supertanker delivers its cargo to neighboring foreign points for transshipment to the United States in smaller tankers.

In making this choice, the environmental implications are as important as the economic ones. Based on studies conducted for the Council by the U.S. Coast Guard, it appears that creating superports in the U.S. carries a lesser risk of oil spill damage than does transshipping oil from foreign ports.

For example, over a 20-year period, at an import level of 2 million barrels per day, we can statistically project approximately 37 vessel casualties resulting in spillage of over 29,000 tons of oil, assuming small tankers averaging 50,000 DWT transshipped oil from Canadian or Caribbean terminals to conventional U.S. ports.

On the other hand, if the same oil were transported direct to U.S. offshore terminals in supertankers averaging 250,000 DWT, we can project about four casualties totaling only 2,500 tons of oil spilled.

The methodology for this statistical analysis is set out in an attachment to my statement.

The supertanker example assumes that transshipment to shore would be via pipelines. Transshipment via small tankers or barges would, of course, increase the casualty potential and tend to negate the advantage of the superport over conventional systems.

In sum, then, the United States is going to need increasing amounts of imported oil. This oil will be imported in small ships—at greater risk of oil spills—if deepwater ports are not available to serve supertankers.

The environmental impacts associated with port construction and oil spills can be significantly reduced by the development of far offshore deepwater ports which will be served by supertankers at locations distant from congested harbors and coastal areas.

The environmental impacts associated with the development of petroleum refining and processing industries would occur to some extent if the same amounts of oil were imported in conventional tankers.

To the extent that these impacts might be focused on areas served by deepwater ports, State, and local governments can plan for and control them, using their traditional powers within a framework of current and pending Federal pollution abatement and land use management laws.

H. R. 7501, the administration's bill, would provide a comprehensive and effective legislative mechanism to assure that both primary and secondary environmental effects are fully considered in the Federal decision making process.

Thank you, Mr. Chairman.

I will be happy to answer your questions.

Mr. DOWNING. Thank you for a very excellent statement.

Mr. TRAIN. Mr. Chairman, I might submit the attachments to my statement for the record at this point.

Mr. DOWNING. They will appear in the record at this point.

[The various attachments to Mr. Train's statement follow:]

ATTACHMENT A.—COMPARATIVE TANKER CASUALTIES OVER 20 YEARS[1]

Assumptions:

Throughput of 2 million barrels per day in both cases.

Case 1—Oil transported to conventional ports in tankers averaging 50,000 dead weight tons (DWT).

Case 2—Oil transported to offshore terminals in supertankers averaging 250,000 DWT; transshipment to shore via pipelines.

Range of spills (in long tons)	Number Incidents		Number of tons of oil spilled	
	Case 1	Case 2	Case 1	Case 2
1 to 150	24.0	3.0	1680.0	186.0
151 to 500	8.5	.65	3306.5	250.3
501 to 3,000	3.8	.44	4674.0	514.8
3,001 to 14,000	1.4	.21	11144.0	1577.1
14,000+	.17		8364.0	
Total	37.87	4.3	29168.5	2528.2

[1] Derived from Table 3 and Figures 1 and 6 of Attachment B, "Tanker Oil Spill Probabilities."

TANKER OIL SPILL PROBABILITIES

INTRODUCTION

This paper presents a detailed methodology by which to project the frequency and magnitude of oil spills from tanker casualties. It was prepared for the Council on Environmental Quality by the U.S. Coast Guard.

TANKER CASUALTY SPILLS

Before a tanker casualty was considered in this analysis, the following criteria had to be met:

The oil spill had to be a direct result of a rupture in a tank, and
It had to be known positively that oil escaped into the water.

A list was compiled from various sources that gave details of tanker casualties world-wide during 1969 and 1970.[1] In those instances where the spilled oil could not be quantified, a magnitude equal to the average magnitude for similar spills of less than 500 tons was assigned; i.e., no catastrophic casualties were assumed to have taken place in these cases. Instances where the casualty occurred at sea more than 50 miles from shore were excluded from the list as not being applicable in a study of supertanker facilities, which will be located less than 50 miles from shore.

Spill data for a supertanker facility alternative at a given port location are presented in terms of frequency and magnitude. The magnitudes are not given as discrete values but rather in five ranges; specifically,:

To 150 long tons;
151 to 500 long tons;
501 to 3000 long tons;
3001 to 14,000 long tons; and,
Greater than 14,000 long tons.

The ranges were selected by plotting the number of incidents within a selected range versus the midpoint outflow magnitude of the range. The ranges were adjusted until their plot yielded a straight line on a log-log graph. (The straight line or hyperbolic function would indicate a fair distribution of the data and a statistically valid selection of ranges). For presentation purposes the ranges were rounded off to the nearest 50 long tons. The data are presented in Table 1.

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[1] "An Analysis of Oil Outflows Due to Tanker Accidents—A Note by the U.S.A. to the Intergovernmental Maritime Consultative Organization," November 1972. U.S. Coast Guard; and. "Tankers and the Ecology," Porricelli, et al, *Transctions*, Vol. 79, 1971, The Society of Naval Architects and Marine Engineers.

TABLE 1

Range	Incidents		Oil outflow	Percent of total oil outflow
	Number	Percent		
To 150 tons	139	63.47	9,695	5.75
151 to 500 tons	49	22.37	19,050	11.29
501 to 3,000 tons	22	10.05	27,120	16.07
3,001 to 14,000 tons	8	3.65	63,690	37.74
Greater than 14,000 tons	1	.46	49,200	29.15
Total	219	100	168,755	100

The data illustrate that the majority of the incidents (188 or 85.84%) are less than 500 long tons and contribute only 17.04% of the total pollution; whereas in a higher range (3001–14000 tons) the 8 incidents constitute 3.65% of the total incidents but 37.74% of the total pollution.

The frequency of occurrence for a spill within one of the ranges is a direct function of the number of such incidents which occurred during the 1969–1970 sampling period. The detailed two-year spill data base was further compared to data compiled by the International Chamber of Shipping (ICS) and the Secretariat General a la Marine Marchande of the Ministere des Transports, France, for the period 1960–1970. While these data were not detailed enough to incorporate in the data base, they clearly reaffirmed the 1969–1970 data; and it therefore can be said that the two-year period is representative of a ten-year period. By extrapolating these figures by statistical inference to a 20-year period, all data are presented as spills of a given range occurring within a number of ship years.

The midpoint of the 1969–1970 sampling period represented 12,206 ship years of tanker traffic.[2] Thus, the expected time for an incident within a given magnitude range to occur can be computed directly from the data.

Ship years can be converted to calendar years for any given entry location by knowing: (1) the number of tankers transiting its coastal, entrance way, and harbor (CEH) zones and (2) the average number of days that tankers require to make any CEH zone transit. This also requires the knowledge of the average number of days per year that all tankers spend in CEH zone transits. This number is relatively simple to compute once one knows:

The average number of round trips that tankers make each year; and

The average number of days that a tanker spends in transit upon arrival or exit from a port.

In the 1969–1970 period there were 6,103 tankers, according to Lloyd's Register of Shipping, with 497 of these tankers greater than 80,000 deadweight tons. Assuming that each vessel on the average spends 2 days on each end of a round trip in CEH zone transit, one can equate the following:

A tanker is in the CEH transit mode 39 days per year; or,

39 days per year equals one ship year of tanker transits.

The projected spill estimations in terms of magnitude and frequency are plotted for each port facility alternative on a log-log scale as the number of incidents within one of the given outflow ranges versus ship years of operations.

An analysis was conducted comparing polluting incident frequency and attendant oil outflow magnitudes. In conducting this analysis tankers were broken into two general deadweight categories, namely:

Those less than 80,000 deadweight tons; and

Those 80,000 deadweight tons and greater.

The intent here was to show whether a relationship does in fact exist between tanker polluting incidents and tanker size. Table 2 depicts the results of this analysis.

These data say that in consideration of the frequency of all types of casualties, as a function of number of tankers, the larger vessels, as presently operating, have a higher probability of being involved. They also say that oil outflow magnitudes are independent of tanker size. One must point out that the data does not contain a single catastrophic accident with a loaded tanker greater than 80,000 deadweight tons. One such incident would seriously alter that result.

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[2] Source: Lloyd's Register of Shipping, Statistical Tables. 1969 and 1970.

TABLE 2.—TANKERS 80,000 DWT AND GREATER[1]

	Percent of total incidents (A)	Percent of world tank fleet (B)	Percent of world tanker tonnage (C)	Percent of total outflow (D)
All polluting incidents	7.89	6.04	30.3	6.38
All polluting incidents less explosions	6.37	6.04	30.3	2.94

	A/B	A/C	D/B	D/C	
With explosions	1.30	0.26	1.06	0.21	Tankers 80,000 DWT and greater
Without explosions	1.06	0.21	0.49	0.097	

TANKERS LESS THAN 80,000 DWT[1]

	Percent of total incidents (A)	Percent of world tank fleet (B)	Percent of world tanker tonnage (C)	Percent of total outflow (D)
All polluting incidents	92.11	93.96	69.7	93.62
All polluting incidents less explosions	93.63	93.96	69.7	97.06

	A/B	A/C	D/B	D/C	
With explosions	0.98	1.32	.99	1.32	Tankers less than 80,000 DWT
Without explosions	0.99	1.34	1.03	1.39	

[1] Tankers 80,000 DWT and greater had 21 polluting incidents, including 5 explosions, during the 1969–70 reporting period with an associated oil outflow of 27,465 long tons. Tankers less than 80,000 DWT had 245 polluting incidents, including 10 explosions, during the same reporting period with an associated oil outflow of 403,254 long tons.

It should also be noted that the case with tanker explosions discounted significantly changes the results. Here, frequency probabilities are also independent of tanker size; i.e., the incident rate is the same for both large and small tankers. It is interesting to note the marked drop in oil outflow magnitudes with an increase in size. Again, however, the cautionary remark concerning the effect of one large laden tanker's involvement in a catastrophic incident will apply.

The reason the data have been presented with explosions segregated is to show their effect on the supertanker frequency and magnitude oil spill spectrum and how the case may be made either way for or against supertankers as has been done in the past. It is also noteworthy that primary explosions occur in two modes of tanker operation:

While the tanker is in ballast and probably tank cleaning at sea; and,

While transferring cargo and more often during the unloading phase.

Another approach compared incident frequency and outflow to the total amount of deadweight tons in the two categories above and below 80,000 tons deadweight. Due to the greater proportion of deadweight (30.7%) in the supertanker category as opposed to the actual number of vessels (6.04%) the results are significantly altered; i.e., the supertanker shows smaller oil outflows in proportion to its representative deadweight.

The baseline port facility alternatives can then be modified for:

Improved tanker construction technology, i.e. double bottoms;

Implementation of traffic control; and,

The use of an offshore terminal.

Data showing the effectiveness of any of these three modifications are either sparse or non-existent. However, reasonable estimates can be made for them; the effectiveness of double bottoms in terms of grounding protection was estimated to be 75 percent; the effectiveness of a traffic control system was estimated to reduce all grounding and collision polluting incidents which could occur in harbors and harbor entranceways by 50%; the effectiveness of an Offshore terminal has been qualitatively taken to reduce in two cases, 40 and 90 percent of all casualties which would occur within the harbors and entranceways—40 percent for a deep water terminal but not necessarily far offshore or out of the heavy traffic density, 90 percent for a true deep water offshore terminal without the traffic density and proximity of the shoreline.

Double-botton construction is just what it sounds like. It uses an outer wall for the hull structure of a vessel and an inner wall for the structure of the oil storage tanks. The resulting space between the two provides additional insurance against oil spillage because it permits damage to the outer hull without necessarily affecting the oil storage systems. In this analysis, we assume a double bottom height on the order of 0.08 percent of the tanker's molded beam and a segregated ballast capacity sufficient to attain 45 percent of the tanker's full load displacement.

Various sources have placed the effectiveness of double bottoms in terms of grounding protection between 61 and 92 percent. A grounding study conducted by the International Maritime Consultative Organization (IMCO) Maritime Safety Committee on Ship Design and Equipment stated that effectiveness is on the order of 73 percent.[3] In this study, an effectiveness of 75 percent is used.

Traffic controls in this analysis are defined as mandatory, radar-guided, computer assisted systems for positive control and coordination of shipping movements at superport facility locations. The effectiveness of such a traffic control system is estimated to reduce by 50 percent all groundings and collisions which cause oil spills and which could occur in harbors and harbor entranceways. This figure is considered more qualitative than quantitative because no real data exists on a martime traffic control system. Some data do exist regarding traffic separation routes, which are strictly advisory and not fully comparable to positive traffic control systems. For example, the average accident rate in the Straits of Dover for the 3 years after traffic routing was established improved by 21 percent over the 4 years prior to routing, despite an increase in traffic and despite the fact that only 75 percent of the vessels transiting the Straits of Dover comply with the routes.[4] Harbor advisory systems such as the one in Teesport,[5] have also shown considerably lower accident rates. In the port of Rotterdam, where more ship tonnage is handled than in any other port in the world, there has not been a single major accident since a harbor control system was instituted several years ago. Thus, the 50 percent effectiveness value used here for traffic control systems, though unquantified, is considered minimal.

The location of a superport can greatly affect the probability of casualties and consequently the magnitude of oil spills. One of the key variables is distance from shore. As distance increases, traffic congestion and therefore casualties from collision are reduced. Far offshore facilities are also in deeper water—reducing the probabilities of groundings. The effectiveness in terms of reduced vessel casualties is not readily quantifiable. However, a detailed casualty analysis by the Coast Guard indicated that approximately 40% of the polluting incidents occur within harbors and entranceways. Of the incidents occurring within harbors and entranceways, approximately 80% are due to collisions and groundings. Two values of effectiveness are used. For offshore locations between 5 and 15 miles from shore, but still exposed to shallow water and to coastal traffic, a 40% reduction of collisions and groundings is assumed. If the site is far offshore, beyond 15 miles, a 90% reduction is estimated.

It is important to realize the limitations of the results; especially when one considers the absence of quantitative data regarding the effectiveness of double bottom, traffic control systems, etc., and perhaps more important the sensitivity of the results to the assigned values of effectiveness. A sensitivity analysis was conducted by varying the value of the effectiveness of the three parameters by 10 percent. The effect of varying this value by 10 percent can change the quantity of oil outflow from 0.1 to a maximum of 10 percent. This same 10 percent variation will alter the frequency of occurrence from 1 to a maximum of 10 percent. These results say that the oil outflow magnitude-frequency specturm will vary in direct proportion with the effectiveness of the super-imposed parameters.

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[3] D.M. Bovet, "Groundings: A Brief Analysis," U.S. Coast Guard, Office of Research and Development, December 1970.

[4] J.M. Beattie, "Safer, Saner Seaways," U.S. Naval Institution proceedings, December 1970.

[5] "Improving Safety of Navigation in the Oil Ports," Europe and Oil, Ferranti Ltd., May 1970.

TABLE 3.—CONVERSION OF SHIP YEARS TO CALENDAR YEARS FOR FIGURES 1-6 [1]

A Percent of throughput transshipped	B Incoming tanker 250,000 dwt ship year/U.S. superport) 20 calendar years	C Incoming tankers 50,000 dwt ship year/(no U.S. superport) 20 calendar years	A Percent of throughput transshipped	B Incoming tanker 250,000 dwt ship year/(U.S. superport) 20 calendar years	C Incoming tankers 50,000 dwt ship year/(no U.S. superport) 20 calendar years
0	208	1, 043	55	926	--------------------
5	273	--------------------	60	991	--------------------
10	339	--------------------	65	1, 056	--------------------
15	404	--------------------	70	1, 121	--------------------
20	469	--------------------	75	1, 187	--------------------
25	534	--------------------	80	1, 252	--------------------
30	600	--------------------	85	1, 317	--------------------
35	665	--------------------	90	1, 382	--------------------
40	730	--------------------	95	1, 447	--------------------
45	795	--------------------	100	1, 513	--------------------
50	860	--------------------			

Any value in column B is the number of ship years accumulated in twenty calendar years as a function of 250,000 DWT incoming supertankers, the amount of the incoming throughput which is then transshipped in 40,000 DWT tankers (shown as a percent of the total throughput), and a 1,000,000 barrels per day throughput.

Column C is the number of ship years accumulated in 20 calendar years as a function of 50,000 DWT incoming regular tankers, assuming a 1,000,000 BPD throughput and no further transshipment.

[1] For throughputs other than 1,000,000 barrels per day, multiply the value in either columns B or C by the ratio of actual throughput to 1,000,000.

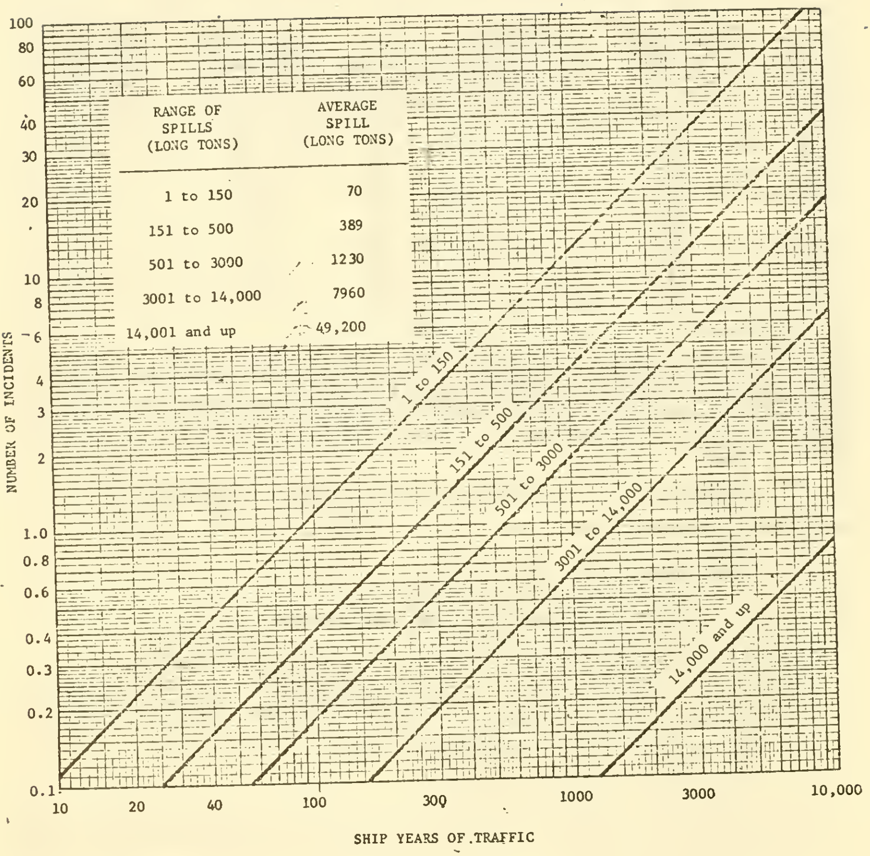
EXAMPLE FOR USING TABLE 3 AND FIGURES 1 THROUGH 6

1. Case with transshipment:
   a. Given:
      Throughput—1,900,000 BBl/day.
      Incoming tanker—250,000 DWT.
      65 percent transshipped in 40,000 DWT tankers.
      Double bottom and traffic control.
   b. From Column B, Table 3—1,056 ship years/20 calendar years:
      Multiply by 1.9 to adjust for throughput—2,006.4 ship yr/20 cal yr.
   c. From Figure 4 find 2006.4 yr along horizontal axis and read from various outflow ranges as follows:
      0.6 incidents at 3,001—14,000 tons.
      1.7 incidents at 501—3,000 tons.
      2.2 incidents at 151—500 tons.
      15 incidents at less than 150 tons.
   d. Compute total outflow by multiplying number of incidents times average spill figures in box:
      $0.6\times 8260=4956$
      $1.7\times 1240=2108$
      $2.2\times 374=823$
      15 s 69=1035

      8922 tons/20 cal yrs.
      =66,915 Bbls/20 cal yrs.
      (7. 5 Bbls/ton).
      =3,345 Bbls/cal yr.
2. Same case with no transshipment:
   a. From column B, Table 3—208 ship yr/20 cal yr.
      —$208\times 1.9=395$ ship yr/20 cal yr.
   b. Incidents at various outflow ranges from Figure 4:
      0.12 incidents at 3001—14,000 tons.
      0.34 incidents at 501—3,000 tons.
      0.41 incidents at 151—500 tons.
      3.0 incidents at less than 150 tons.
   c. Compute total outflow:
      $0.12\times 8260=991$
      $0.34\times 1240=422$
      $0.41\times 374=153$
      $3\times 69=207$

      1,773 tons/20 cal yrs.
      =13,297 Bbls/20 cal yrs.
      =665 Bbls/cal yr.

Figure 1



RANGE OF SPILLS (LONG TONS)	AVERAGE SPILL (LONG TONS)
1 to 150	70
151 to 500	389
501 to 3000	1230
3001 to 14,000	7960
14,001 and up	49,200

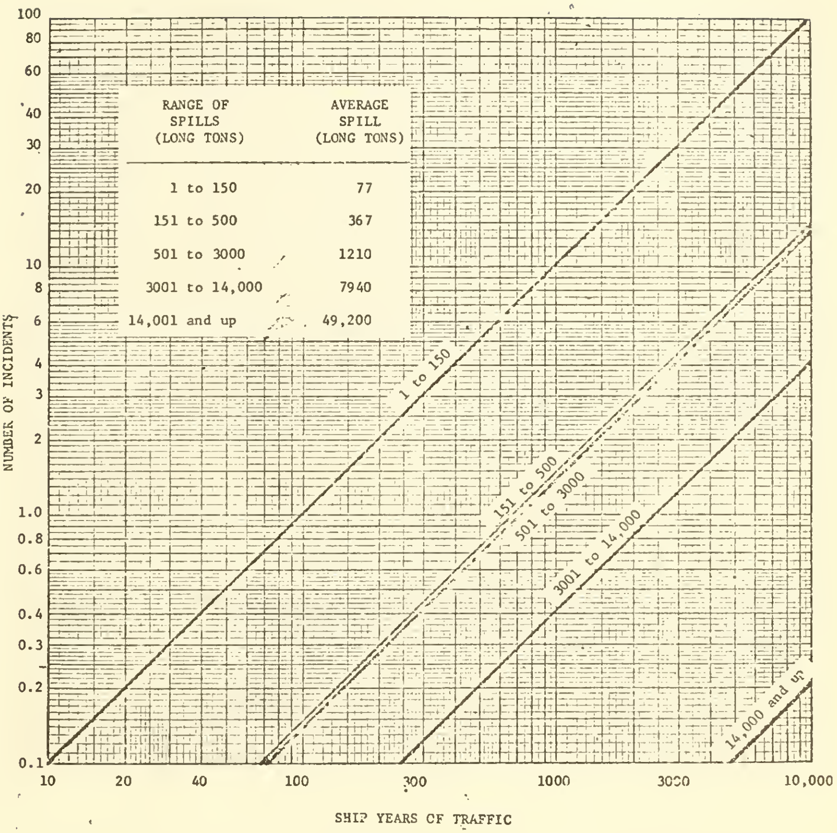
BASELINE RATE

ATTACHMENT C.—STUDIES OF THE EFFECTS ON THE MARINE ENVIRONMENT OF DEEP-WATER PORT DEVELOPMENT

(Copies of the reports listed below may be obtained by writing the National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, Virginia 22151)

	NTIS Order No.	Prices	
		Paper copy	Microfiche
1. Environmental Vulnerability of the Delaware Bay Area to Supertanker Accommodation; prepared by the University of Delaware.			
Volume I: Summary	PB-219 801	$4.85	$0.95
Volume II: Biology	PB-219 802	9.00	.95
Volume III: Chemistry, Engineering, Geology and Physical Oceanography.	PB-219 803	9.00	.95
Volume IV: Biology Appendix	PB-219 804	10.60	.95
Volumes I-IV	PB-219 800	29.70	----------
2. Possible Effects of Construction and Operation of a Supertanker Terminal on the Marine Environment in the New York Bight; prepared by the State University of New York at Stonybrook.	PB-219 649	3.00	.95
3. Preliminary Assessment of the Environmental Impact of a Superport on the Southeastern Coastal Area of Louisiana. Louisiana Superport Studies; prepared by Louisiana State University.	COM-73-10544	6.00	.95
4. A Preliminary Assessment of the Environmental Vulnerability of Machias Bay, Maine to Oil Supertankers; prepared by the Massachusetts Institute of Technology.	COM-73-10564	3.00	.95
5. Environmental Aspects of a Supertanker Port on the Texas Gulf Coast; prepared by Texas A&M University.	PB-220 051	10.60	.95

Figure 2



EFFECTIVE DOUBLE BOTTOM
(75% REDUCTION IN GROUNDINGS)

Mr. Downing. Judge Train, there is nothing to prevent some entrepreneur from constructing a superport right now, is there, provided he did so beyond the territorial, state-controlled, waters?

Mr. Train. In theory, I suppose no.

In practice, I would think there is considerable reason why there are numerous constraints on such a freedom of activity.

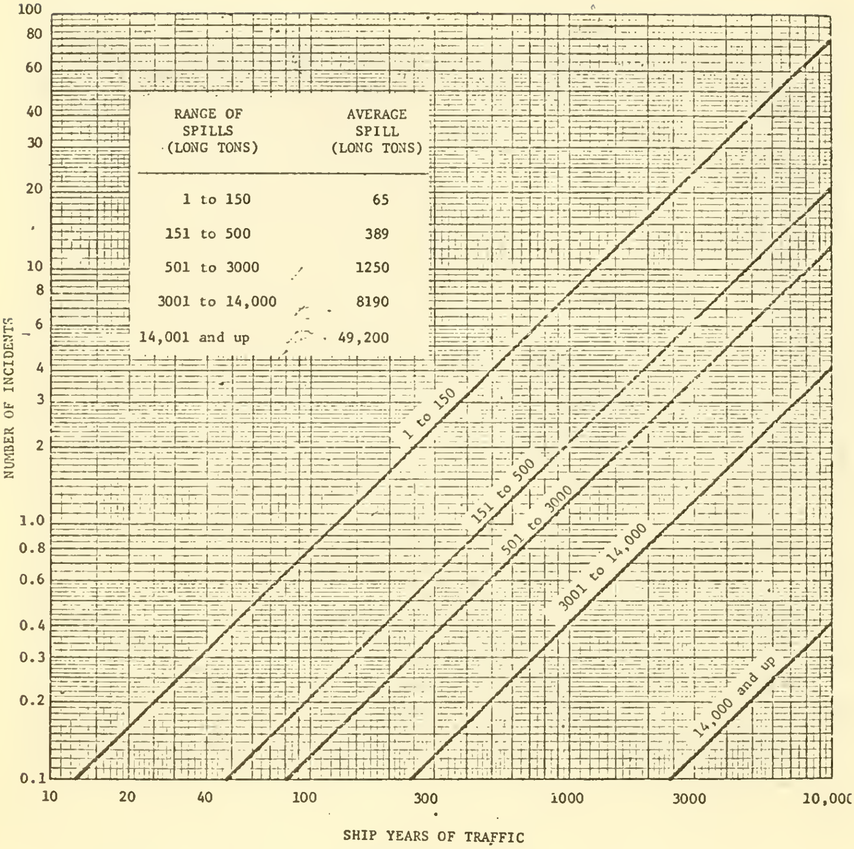
The oil would have to be transshipped in some fashion from the offshore terminal to the shore, either by pipeline or by other tanker or barge. And they would come under various Federal regulatory systems at that point.

I believe that the Federal Government could, by using a wide variety of existing authorities, effectively control such development.

Mr. Downing. Do we have any effective controls over the oil wells that are out in the ocean now?

Mr. Train. Yes, we do.

Figure 3



IMPROVED TRAFFIC CONTROL
(50% REDUCTION IN GROUNDINGS & COLLISIONS)

We have a very extensive Federal regulatory system administered by the Department of Interior through the U.S. Geological Survey and the Bureau of Land Management with respect to all oil and gas and other mineral development on the Outer Continental Shelf.

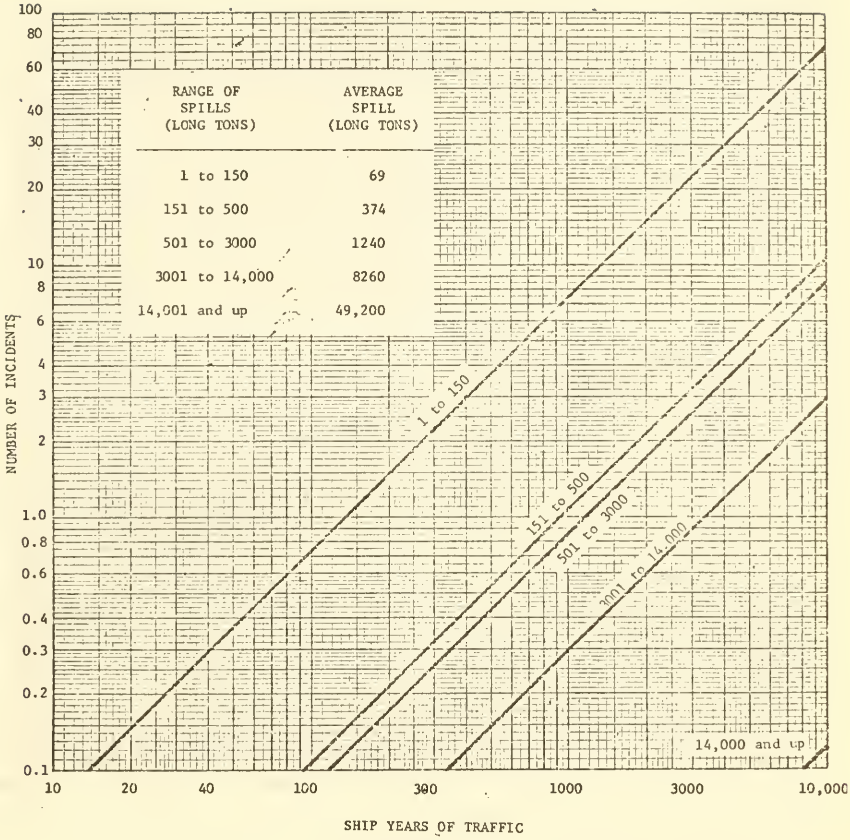
Mr. DOWNING. This legislation does not provide for veto by the State.

Do you think it should provide for veto?

Mr. TRAIN. I think that the bill, Mr. Chairman, in practical effect would assure that a State that did not want such a facility would not have one off its shore.

There is no legal veto prescribed in the legislation, I suppose for technical legal reasons that the authority of the State does not extend beyond the 3-mile limit, and to provide, technically, a formal veto would probably create, in the minds of many, unfortunate legal precedents.

Figure 4



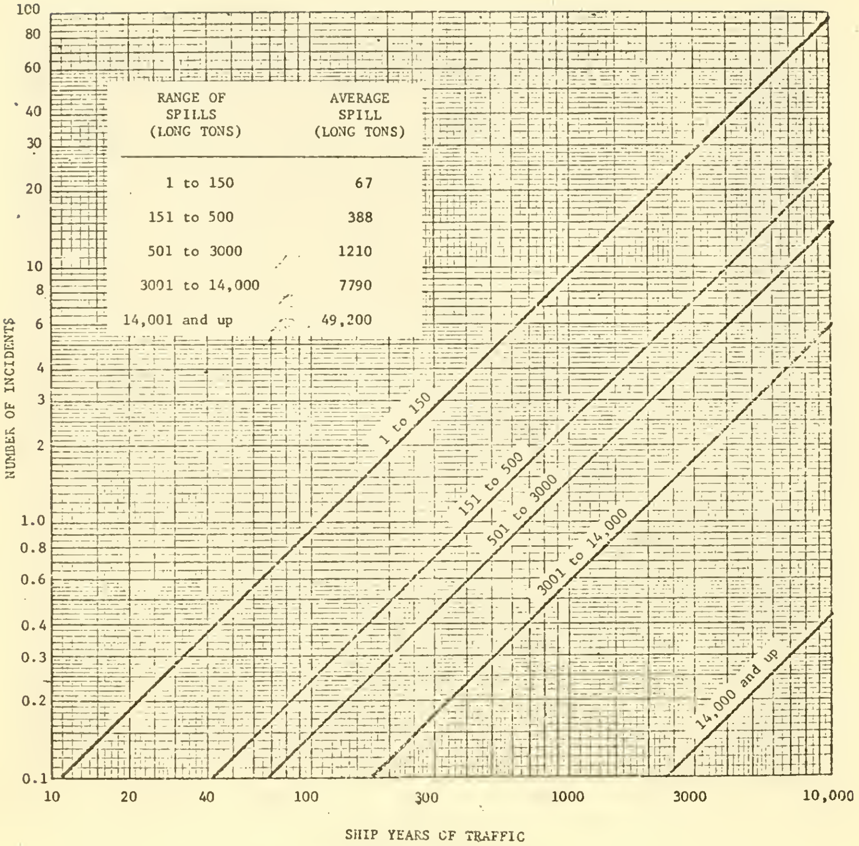
DOUBLE BOTTOM & IMPROVED TRAFFIC CONTROL
(85% REDUCTION IN GROUNDINGS & 50% REDUCTION IN COLLISIONS)

As I pointed out, the pipeline connection to the shore would necessarily pass through State borders or submerged lands under the control of the State. The States would have complete authority under their constitutional powers to completely ban or otherwise control the conditions under which such oil came ashore.

Practically speaking, again I say if a State does not want such a facility off its shore and does not want the oil from such a facility coming to its shores, it has the practical authority to reach that result.

Beyond that, the bill does require that in the granting of any license, the Secretary of the Interior must consult with the Governor of the State to insure that the application and the planned faciliy is in accord with and compatible with the State land use program so that, here again, I believe that the States, assuming their willingness to undertake reasonable initiatives, are in a very good position to influence these decisions extensively.

Figure 5



OFFSHORE TERMINAL
(40% REDUCTION IN CASUALTIES OCCURRING
IN HARBORS AND ENTRANCEWAYS)

Mr. Downing. If I understand you correctly, what you are saying is that it is not necessary to put the veto in because the State has its own authority, once the pipeline gets in State waters. They can block it, I assume.

Mr. Train. In effect, yes.

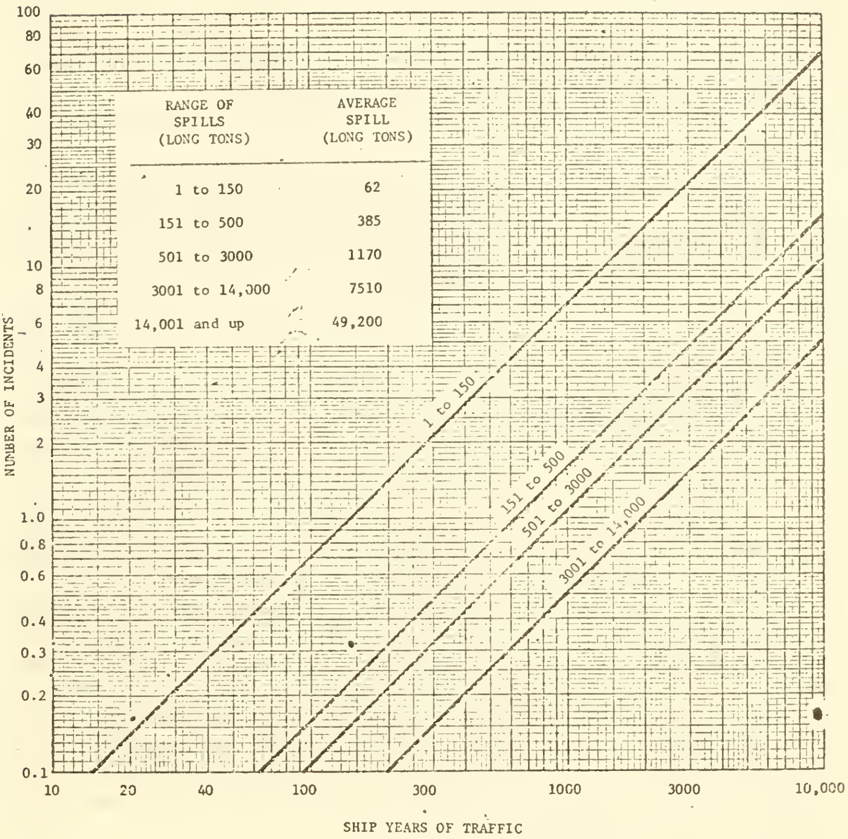
Mr. Downing. There is quite a jurisdictional dispute here, Judge Train, as to who should administer this legislation.

Some people say the Department of Commerce; some say the Department of Interior. And you have suggested that the Department of Interior is the proper agency.

Could you expound on that a little more? There are some who believe it should be in the Department of Commerce.

Mr. Train. I suppose, to be completely fair, we could say that several departments beyond the two that you have mentioned can make some claim to jurisdictional interest here—the Department of Transportation & EPA, among others. But I think you are quite right.

Figure 6



OFFSHORE TERMINAL
(90% REDUCTION IN CASUALTIES OCCURRING
IN HARBORS AND ENTRANCEWAYS)

The primary jurisdiction question would seem to be as between Commerce and Interior.

As I point out in my statement, the licensing of these facilities and the overseeing of their operation involves a broad range of important concerns: environmental, economic, energy, and land use.

It seems to the administration that the Department of the Interior presently represents the broadest scope of these authorities. As we know, the President will be shortly submitting a proposal for a Department of Energy and Natural Resources and that department is where this authority would ultimately be located.

As you know, that department is to be constructed basically upon the existing framework of the Department of the Interior.

Mr. Downing. One last question.

We are operating under the 5-minute rule due to the fact that we have many witnesses, and the chairman will also obey the 5-minute rule.

You advocate double bottoms. I know you have wide knowledge, but the practicality of double bottoms does not lie in your field of expertise. Is that not true?

Mr. TRAIN. Certainly, it is quite true that I have no personal expertise on the practicality of double-bottoms.

Mr. DOWNING. Really, you could have omitted that part from your statement.

Mr. TRAIN. No, sir, this is a matter of interest to our council.

Mr. DOWNING. Do you know what double bottoms cost?

Mr. TRAIN. I have seen figures but I do not have them in mind right now. They would be a substantial, but effective, element of the cost of environmental protection.

Mr. DOWNING. A triple bottom would be even better.

Mr. TRAIN. Well, I do not know whether that would be necessary, Mr. Chairman.

Mr. DOWNING. This committee is going to take that matter in great depth and, hopefully, we will come up with some answers.

Mr. TRAIN. You have the testimony of Mr. Johnson, the Treasury representative, and I think that he has some estimates of the cost.

My recollection from our own discussions is that double bottoms could add something to the effect of 10 percent to transportation costs for oil transported in ships with double bottoms.

How much that would add to the cost of the oil or to the refined product ultimately, I cannot say precisely but, if all crude oil were carried in such ships it would amount to something less than a penny per gallon of gasoline at the pump. Naturally, since the existing tanker fleet, and that on order or under construction, is so large, only a small fraction of crude oil transported to the United States could be delivered in double bottomed ships for quite some time. Its impact on overall prices would probably be imperceptible to the consumer.

Mr. DOWNING. Thank you very much.

Mr. Dingell?

Mr. DINGELL. Thank you, Mr. Chairman.

Mr. Train, you are beset here with problems regarding the placement of responsibility over these matters. One of your problems is the fact that some years ago, the administration sent forward a reorganization plan which put NOAA in the Department of Commerce instead of putting it in the Department of Interior.

Now, without raking those ashes unduly, I think you should recognize the fact that NOAA happens to be in the Department of Commerce, and is one of the reasons we have the conflicts and problems here.

It has been indicated in the press periodically that the President proposes to submit to the Congress either legislation or a reorganization plan at an early time to set up a Department of Natural Resources.

Are you able to tell this committee this morning what is in the President's or the administration's contemplation with regard to the creation of a Department of Natural Resources?

Mr. TRAIN. I think I should leave that to the President, Mr. Dingell.

Mr. DINGELL. What is in the mind of the administration on this point?

Mr. TRAIN. I have read in the papers speculation that NOAA would be included in the new Department of Energy and Natural Resources.

Mr. DINGELL. Is it contemplated that such a plan will be submitted to the Congress at an early time?

Mr. TRAIN. My understanding is that a plan, and I believe a legislative proposal for a Department of Energy and Natural Resources will be submitted to the Congress very shortly.

Mr. DINGELL. Is it going to be by a reorganization plan or by legislation?

Mr. TRAIN. I believe by legislation. That is my understanding.

Mr. DINGELL. That is a much more acceptable way to do it.

Mr. Train, what expertise does the Interior Department have in the field of navigation and marine law?

Mr. TRAIN. Well, as to navigation directly, I would suppose no particular expertise as a result of any statutory functions.

As to marine law generally, the Department, of course, is very much involved in Outer Continental Shelf matters.

Mr. DINGELL. Yes, but now navigation. What do they know about navigation, handling of vessels, currents?

What do they know about the high seas, the law of the seas?

What do they know about vessel construction? What do they know about the rules of the road in navigation?

Mr. TRAIN. They know a good deal about the law of the sea, but I would suppose not much about navigation and the handling of ships.

Mr. DINGELL. Now, these superports are going to be how far offshore?

Mr. TRAIN. The sites that we used for our study ranged between 17 and 26 miles, although I have heard proposals for locations as far out as 30 miles or so.

Mr. DINGELL. Well outside the territorial waters, well outside the 12 miles contiguous fishing zone, quite far offshore.

I am curious to know why your agency, or why the administration has chosen not to build upon the coastal zone management legislation which deals with the entire problems of the coastal zone and the shelf, and has rather placed this in an agency which largely has onshore responsibilities under the reorganization plan that was submitted to this Congress some years past by the administration.

Mr. TRAIN. All of these facilities that we are talking about would be on the Outer Continental Shelf, obviously. They would be there almost by definition.

The Outer Continental Shelf and its management, insofar as the bottom resources are concerned, has been the function of the Department of Interior from the beginning. That would be the basic rationale for giving the Department of Interior this authority.

For the same reason, the Department regulates all leasing and exploitation of oil and gas resources on the Outer Continental Shelf.

Mr. DINGELL. Would you address yourself now, please, Mr. Train, to the question of why the administration has sought no funds for the administration of the coastal zone management legislation enacted by the Congress last year?

Mr. TRAIN. This is related very closely to the fact that the administration has pending in the Congress National Land Use Policy Act for which there is funding in the budget. These two authorities relate closely to one another, as you know. The exact way in which they will mesh, assuming enactment of a National Land Use Policy Act, is not entirely clear as yet, because that latter act is not yet in its final form and it is the belief of the administration that funding of these overall land planning management activities should be considered and handled or determined as a whole.

For that reason, the administration has not proceeded to make available budget amounts for the making of grants under the Coastal Zone Management Act.

OMB has approved, as I recall, a certain amount of reprograming of $200,000 or $300,000 this year to permit the planning to get underway within NOAA for this responsibility.

Mr. DINGELL. You are aware that this committee very carefully drafted the coastal zone management legislation so as not to conflict with the potential enactment of the National Land Use Policy Act.

Can you cite to this committee a conflict that exists between the administration's legislative proposal and the coastal zone management legislation which is now on the books?

Mr. TRAIN. Well, I have only just briefly scanned, Mr. Dingell, the report of the Senate Interior Committee on the National Land Use Policy legislation, and I am not sure that I can identify any conflicts at the present time.

I think one of the problems is that it appears now, as if we are developing at the State level, two completely distinct land management programs, and this is pointed out in some of the views expressed in the Senate committee report. And I think this is one of the problems, not so much one of conflict but of the need to insure coordination between separate programs and exactly how this is going to come out, I am not positive at this time. This is the problem.

Mr. DINGELL. Would you be so kind as to submit to us any discernible conflicts that exist between the coastal zone management legislation and the administration's draft land use policy legislation?

Mr. TRAIN. I will look into it.

[The following was supplied for the printed record:]

There are no discernible conflicts between the Coastal Zone Management Act of 1972 and the administration's National Land Use Policy Act proposal. The administration's Land Use bill does include portions of the coastal zone as required elements of a State's land use program. This is as it should be in order to insure that the States develop a comprehensive regulatory system for both its inland and coastal areas, rather than developing conflicting programs and competing new agencies at the State level. We are confident that NOAA and the Department of the Interior can effectively coordinate these two programs so as to discourage such conflicts and instead encourage a unified State response.

Mr. DINGELL. Mr. Train, thank you.

Mr. Train, as a friend and admirer of yours, it is always a pleasure to have you up here even though we sometimes have some differences.

Mr. Downing. Mr. du Pont?

Mr. du Pont. Thank you, Mr. Chairman.

Mr. Train, I would first like to congratulate you on a very fine statement, and I would like to refer to two or three sections of it and ask you some relatively specific questions that relate to the location or siting of superports.

First, you stated that you did not believe a veto power was necessary for a State legislature or State Governor; it did not need to be written into the legislation because States could effectively prohibit superport locations by controlling the onshore aspect of it.

I am sure you are familiar with the Delaware coastal zone law.

Would it be your opinion that that law is the kind of prohibition that would keep a superport from being located off Delaware?

Mr. Train. I am probably not all that familiar with the specifics of the Delaware law, Mr. du Pont.

If the Delaware law is such that a utility or petrochemical complex could not be located on the coast of Delaware, I would suppose that would strongly influence the decision of an oil company, or group of oil companies, toward not locating a supertanker facility off Delaware.

Mr. du Pont. Our legislation specifically prohibits the building of superports, the building of oil refineries in Delaware's coastal zone, and I would hope that that would prohibit the building of a superport off our coast.

But, in any case, you would have no objection from your point of view to having language in the legislation that would give the State legislature what amounts to a veto, right?

Mr. Train. No. I did not say that, Mr. du Pont.

I pointed out that while I am not an expert in this area of international law or national law, that there could well be precedental problems involved in giving the State a legal veto authority over an activity of the Federal Government beyond the 3 miles within which the States would normally have jurisdiction.

Here we would be talking about giving the State authority to veto an activity of the Federal Government on the high seas and I think that the law of the sea lawyers would be greatly disturbed by that.

From a practical standpoint, I do not know it would make much difference.

Mr. du Pont. All right.

Now, moving on in your statement, my impression in reading it and listening to you present it is that you feel very strongly that the location of superports should be well offshore and not in the coastal or estuarine waters where the possible potential of spills could be very damaging.

Mr. Train. Absolutely. And I would say that the further offshore, the better, within limits.

Mr. du Pont. Of course.

You would then view the proposals of the Commerce Department and the Corps of Engineers to locate these facilities right within the Delaware Bay as considerably inferior to other proposals to put them offshore?

Mr. Train. Yes, sir.

Mr. du Pont. Now, Mr. Train, you also commented on the land side effect of petrochemical complexes changing the character of the existing countryside.

On pages 13 and 14 of your statement, you talk about creation of new petroleum-related industries that would induce associated commercial and economic activities, and the fact they would put a load on sewage treatment, transportation, schools, electric power, and recreational facilities.

To quote you, on page 14 you said:

> Depending upon the nature of a given area, induced effects could cause it to change from undeveloped to industrialized, or from developed to highly industrialized.

I take it from that that you envisage a major shoreside development that would result from the building of a superport anywhere off the coast?

Mr. Train. That is my understanding of the economics of the industry, that this would be the same result.

Mr. du Pont. Now, Mr. Horton testified before us a couple of days ago in setting the costs of an offshore superport at about $300 million.

He estimated also that the land-side development that would go with that could very probably exceed $300 million. And I am wondering if you have any feeling for the balance between the two, assuming, for the moment, that Mr. Horton is right, that an offshore facility would cost $300 million, would you see that kind of development in that order of magnitude occurring onshore?

Mr. Train. I think it would be highly likely. I think when one talks in terms of a petrochemical complex, that you are probably talking of facilities requiring capital investment of about that kind of magnitude.

The figures you give for the cost of the offshore facility seems rather high, particularly for a single point mooring.

Mr. du Pont. Oh, it would be; that was Mr. Horton's figure. But I was not trying to argue that.

Mr. Train, I appreciate your very fine testimony, and I hope you appreciate, as I do, that the sentence I quoted you on page 14 of your testimony about turning undeveloped areas into industrial ones just fits to a tee Sussex County, Del. And I know you enjoy that part of the world, and I appreciate your helping us keeping the superport out of there.

Thank you, Mr. Chairman.

Mr. Downing. Mr. Metcalfe?

Mr. Metcalfe. No questions.

Mr. Downing. Mr. Young?

Mr. Don Young. Mr. Train, I doubly appreciate your testimony.

I have asked the Coast Guard and other people on different occasions about their need for navigational equipment to avoid collision.

You state the use of larger tankers would have less pollution than smaller tankers, but some pollution.

I still think that the navigation aspect that was brought up that we should continue to search for that. We fly airplanes by the thousands, one every 20 seconds that leaves the airport. Midair collisions are very rare.

You speak about 30 collisions. These can be avoided. We should look at this navigational aspect. It can be done. We have the technology.

Mr. TRAIN. Mr. Young, you are entirely correct, and it is certainly contemplated that this kind of navigational control effort be made, not only in terms of domestic controls through the Coast Guard but in terms of international controls. And there is a provision—I think it is maybe the last provision in the administration's bill, which directs the Secretary of State to pursue international agreement with respect to the navigational aspects of such deepwater ports.

What would be envisioned here, I suppose, would be special sea lanes, uniform communication and radar technology, and things of this sort to bring the danger of collision to the lowest possible point.

Mr. DON YOUNG. The collision in the New York Harbor, for instance, regardless of whether it was a steering failure or whatever, should never have happened.

With proper navigational aids ashore and aboard ships, that should never have happened.

I just think the idea of the premise that we are going to have collisions in the future is correct, but they can be avoided.

I thank you for your testimony.

Mr. TRAIN. There are some extraordinarily clean records as far as collisions are concerned in given ports around the world. And I was reading just recently with respect to the Port of Rotterdam, which I think has the largest amount of maritime traffic of any port in the world, and there has not been a major collision in Rotterdam Harbor for several years.

So, it can be done.

Mr. DON YOUNG. And this is done by navigational equipment, modern equipment.

No further questions.

Mr. DOWNING. Mr. Breaux?

Mr. BREAUX. Thank you, Mr. Chairman.

Mr. Train, I apologize for coming in late. I have not had an opportunity to read all of your statement, only glance through it.

As you know, I represent the southwest area of Louisiana. Unlike some sections of the Nation, we would very much welcome the location of a deepwater port that is constructed properly with the proper safeguards taken to insure that we have no problems with the environment and ecology and, at the same time, meet the energy demands of our Nation.

A representative of the Department of Interior was before the committee recently and said the Interior Department would be the proper agency to regulate construction of deepwater ports.

Do you feel that the Interior Department is the proper agency to handle the supervision and permits for deepwater ports, and, if so, why?

Mr. Train. Yes, sir, I do.

It is the administration's opinion that the Department of Interior is the proper place to put jurisdiction over this licensing authority. And let me add in respect to that, that the administration's bill does require the Secretary of the Interior to consult with all of the other agencies that have an obvious interest in the subject, in the process of acting upon a license application.

The administration's reason for recommending Interior are severalfold, as I have pointed out earlier.

First, the issues involved in the siting and the operation of deepwater ports for supertankers involve problems of environmental protection, economics, energy supply and land use control, in terms of the shoreside impacts. While recognizing that there is probably no one place that has all of these to the exclusion of any other agency, it does seem to the administration that the Department of the Interior, as is presently constituted, represents the broadest scope of the responsibilities that I have outlined.

Now, beyond that, as I was mentioning in answer to a question from Mr. Dingell, the President will shortly be transmitting a legislative proposal to the Congress for a new Department of Energy and Natural Resources. It is my understanding that the functions of NOAA would be included in the new Department as would certain of the navigational functions and the permit authority of the Corps of Engineers. Thus the new Department of Energy and Natural Resources would very clearly embrace the widest range of the authorities and functions involved in this subject.

Mr. Breaux. You mentioned in your answer, Mr. Train, the requirement of consultation with other agencies and other departments.

I think the bill also calls for a consultation with the Governors of the various States adjacent to the proposed location for deepwater ports.

Suppose the Secretary finds and makes a recommendation that a port should be located off the shores of State X, and then we find that the Governor of State X says we do not want the port located there.

What action should the Secretary take under those circumstances?

Do you consider this a right of veto by the State as the bill is presently drafted, or do you envision something else being needed?

Mr. Train. It is not a legal right of veto, and as I was pointing out to Mr. du Pont, it raises, as I understand it, a series of questions in the minds of the law of the sea lawyers to give a State legal right to veto a Federal action on the high seas outside the 3-mile limit.

However, in practical effect, if a Governor were clearly opposed to such a location, and if it were clear that he was speaking for the State, I cannot conceive that a license would be granted.

I have also pointed out that the States through their control over the pipelines that would be coming through the 3-mile territorial water, and the shoreside facility connections and so forth, have, in practical effect, a veto authority.

Mr. Breaux. One final question, Mr. Chairman.

I notice, Mr. Train, that you pointed out in the last paragraph on that page 12 of your statement one of the major environmental disadvantages of a single moor facility would be the problem of containing spills during an unloading operation, and you point out that apparently little can be done to contain spills during unloading operations.

My question is, and not being facetious, cannot we just turn the pump off if it causes spilling?

Mr. TRAIN. It certainly can be done. I think one of the risks involved is the breaking of the hose when the ship is moored to the buoy.

One of the more advanced technologies which our Council believes should be examined and further developed is to move the tanker manifold from its traditional midships location to a bow location. If the hoses connected to the bow, the ship could more easily avoid swinging across the hoses which sometimes occurs at the present time.

It is also our view that strict standards should be developed to require that pumping be stopped at times when sea levels or wind velocities reach certain heights.

Now, we are talking about very large volumes of oil being pumped per minute. I understand that a pumping rate of up to 100,000 barrels an hour is possible, so that, even with a rapid cutoff, you do run the danger of a certain amount of oil reaching the sea.

Mr. BREAUX. Thank you, Mr. Chairman.

I realize my time is up. It is an area that we could talk about a great deal.

Thank you again, Mr. Train.

Mr. DOWNING. Mr. Snyder?

Mr. SNYDER. Thank you, Mr. Chairman.

If Louisiana should change their mind, it is quite possible that if they veto a deepwater port, all of the States could veto it.

Mr. TRAIN. That would be a possibility.

Mr. SNYDER. I would be interested, too, in the same vein, if some of your legal eagles could give us some advice, assuming that item 18 of the Law of the Sea Conference develops something in the way of international agreement on deepwater ports, if, in fact, States have the right to veto a deepwater port off their shore beyond the 3-mile limit, if this might not, in effect, put a State in position directly or indirectly being involved in negotiation with foreign governments in violation of the Constitution of the United States.

Mr. TRAIN. I think this is a very real concern.

As I said earlier, I felt that probably the basic reason for not giving a State a veto authority was the law-of-the-sea concern, and that they would be injecting the State into what is otherwise either the jurisdiction of the Federal Government or of international bodies. And I think this could create very serious problems.

But, in practical effect, as I have said, it seems to me that a State could bar such a development if it wished.

Mr. SNYDER. In regard to Mr. Breaux's question, when he asked you for some basis for your belief of the administration's position that Interior should have this matter, you read a list of half a dozen different matters and indicated that Interior was more closely related to those matters than perhaps any of the other agencies that might be involved as a basis for your conclusion.

I would like to read to you a list of things that I think would be impacted, some of which involve Interior, some do not, and maybe enlarge on your list a little bit, and see if you still reach the same conclusion.

First, by way of international conventions, the Conference of the Territorial Sea and contiguous zone. We have a Convention on the Continental Shelf, Convention of the High Seas, Convention on Fishing and Conservation of Living Resources of the High Seas. We have the International Convention for the Safety of Life at Sea.

We have the International Regulation for Preventing Collisions at Sea. We have a Convention on Facilitation of International Maritime Traffic. We have the International Convention for the Prevention of Pollution of the Sea by Oil and, of course, we have the pending U.N. Conference on the Law of the Sea.

In addition to these, we have Federal laws that would be involved, the Outer Continental Shelf Act, anchoring ground for vessels, safety of life at sea, Rivers and Harbors Act of 1899, Ports and Waterways Act of 1972, Federal Water Pollution Control Act, the act to establish loadlines for vessel, Federal Boats Safety Act of 1971, Vessels Bridge to Bridge Radio Telephone Act of 1971, Maritime Protection Research Sanctuaries Act of 1972, 18 U.S. Code 831 that deals with pipeline safety, the Merchant Marine Act of 1936 and 1970, National Environmental Policy Act of 1969, Coastal Zone Management Act of 1972, and the General Customs and Navigation Laws of the United States, many laws pertaining to admiralty, Federal Tort Claims Act, and I am sure I have not got them all.

Now, would you say, in your opinion, Interior is involved with more of those than any other particular department of the Federal Government?

Mr. TRAIN. I would say it either is or will be in its new configuration in the Department of Energy and Natural Resources.

The listing I gave earlier, I neglected the Outer Continental Shelf, and I think this is a very important element, and I appreciate your reminding me of that.

The Department does at present have jurisdiction over management of the Outer Continental Shelf insofar as the seabed resources are concerned.

Mr. SNYDER. Two or three of that list, Interior has involvement with. I think if you look at it Interior has fewer connections with those that I attempted to enumerate than some other departments of Government.

I would hope that you and those involved with this in the administration would look over that list and perhaps even try to enlarge it and see if you still reach that conclusion.

Thank you very much.

Mr. DINGELL. We commend the gentleman from Kentucky. He has come up with again the precise point that troubles me, and that is after some years of promising, we still have no major effort by the administration to set up a Department of Natural Resources.

We have an occasional message, but I can discern no visible effort by the administration to get a Department of Natural Resources set up.

Mr. TRAIN. One was submitted to the Congress the last session.

Mr. DINGELL. But there was no pushing.

I introduced legislation. You folks sent us a message and went promptly to sleep.

Mr. DOWNING. Mr. Steele?

Mr. STEELE. Thank you, Mr. Chairman.

Mr. Train, I want to refer to part of your testimony you have just gone over with another member.

You point out that little can be done to contain spills during unloading operations at the single point mooring type of facilities. And you go on to say that further development and experience with the single point mooring technology will be necessary to alleviate these problems before these facilities come into general use in the United States.

What is your understanding as to the timetable for the first such, or the first two such major deepwater ports?

What are we talking about in terms of time exactly and will that time schedule permit the development of such new technology, and should we proceed without the development of such new technology?

Mr. TRAIN. I cannot give you an exact answer to the timetable.

As you know, there are applications already pending. We know the proposal off the coast of Louisiana.

I would say that once legislation were passed that applications would be enacted upon perhaps as early as a year, although I am not positive because there is a very extensive consultative process set up in the administration's bill and other procedures that have to be complied with.

We are talking of potentially a fairly short range of time, Mr. Steele.

I am not suggesting, Congressman Steele, that we hold up acting on such applications until after all these technologies are developed in the future.

What I am trying to say here, however, is that I believe we should set high standards that will keep the heat on industry to develop new and improved technologies to further minimize the risks of spills from these offshore facilities.

I mentioned earlier one possibility, and that would be the shift from the more conventional midship's connection to the tanker a bow connection which would minimize the danger of breaking up the line. These kind of protective devices can be developed without any particular length of time involved.

It is just simply a matter of requiring certain safeguards, as has been done with pipelines and with other facilities.

These are the kinds of things we would have in mind, and I am probably, more than anything else, trying to signal here the very strong interest of the Council on Environmental Quality in seeing to it that the maximum practical efforts are made to protect the environment through the regulations of the Secretary of the Interior and through the action on individual applications.

Mr. STEELE. Well, without advances in single point mooring technologies as they exist today, the operation of deepwater ports, according to your testimony, guarantees—you do not use the word "guarantee," but I have to infer that from your testimony—that there will be oil spills and that these will be extremely difficult to contain.

In other words, my question is, should we move forward until those new technologies are developed?

Mr. TRAIN. I think you may have misinterpreted what I said in my statement, and I can see why it would be open to misunderstanding.

I am not saying that the spills will necessarily occur.

What I am saying is that if they do occur, then it is going to be difficult to contain them when the ship is connected to a single point mooring because of the difficulty in putting an apron around it.

I am not saying that there needlessly will be a large amount of spills.

Mr. STEELE. But there are bound to be spills. You know that and I know that.

Mr. TRAIN. Yes, of course, there will be spills.

Mr. STEELE. You state little can be done, and I just wonder, given your priorities of protecting the environment, how, if that is, in fact, the case, you could recommend that we move forward until that particular problem is solved unless, indeed, in your opinion, it is not a serious problem, which is a little difficult for me to accept.

Mr. TRAIN. All of these things are very serious problems. But the overall-risks appear to be much less with SPM's located far offshore.

I hope I have not left the impression with the committee that I believe there will be more oil spilled by reason of the single point mooring offshore deepwater port facility than would otherwise be spilled if oil is brought into inshore locations. Absolutely not.

Our entire statistical analysis indicates that, even with current technology, there is likely to be less oil spilt at offshore locations. And if these locations are properly sited, far enough out with due account given to the location, the direction of wind and ocean currents and other factors of this sort, oil that might be spilt could be less damaging and the use of these facilities could be environmentally preferable.

Mr. STEELE. Thank you.

Thank you, Mr. Chairman.

Mr. DOWNING. Mr. McCloskey?

Mr. MCCLOSKEY. Thank you, Mr. Chairman.

Mr. Train, I would like to outline an area of inquiry and ask you to comment on it.

This bill presupposes that industry, or a consortium of industry, will come before an agency set up by this bill and make application for a permit to build one of these facilities, and then a State may or may not have the right of veto. And there will be a lengthy permit application procedure in which environmental, transportation, energy, land use issues will all be involved.

We have been moving toward a national energy policy, national land use policy, national transportation policy, national environmental policy, and with the tremendous bulk of oil that is going to come in. I look at one of these tankers, a 530,000 deadweight tonner that will bring in 4 million barrels of oil, which is one-quarter of a day's consumption in the United States, and it would seem to me if there were any need for a national policy, it would be a national policy as to the location of the superports; that we might put one on the Gulf Coast, one on the West Coast, one on the East Coast, for example.

Yet, we are under the illusion here that any State can prohibit it by veto. We have seen in the last year or so cases where States overrode the decisions of their own government, the State of Colorado in bringing the Olympics in; the State of California on the coastal zone management bill; the State of Delaware has adopted a viewpoint.

In view of our Alaskan pipeline experience, where a consortium of industry went to the government, and I am glad to see our excolleague from Alaska here, who is only too familiar with this problem, is it not a little unfair to ask the industry to put up hundreds of billions of dollars as they did in Alaska and then go through a period of uncertainty as to whether they can build a port in a given area or not?

Just take ocean currents where environmental considerations may dictate that only one State on the East Coast or West Coast can be constructed offshore without the danger of ocean currents bringing in an oil spill on some recreational beach such as in British Columbia, which there is concern with the Alaskan pipeline.

I am wondering if this is the best method to set up a procedure of this kind, and then ask industry to bear the brunt of all the monetary investment in a given place which then the governmental decision may say no, we think it ought to be in another place because one or more of these national policy considerations.

Should we not recognize that this is a national decision, that the Federal Government should make the decision as to where one of these superports should be located instead of going through the Mickey Mouse problems of States being left with the right of veto, industry being faced with the cost of the investment leading to the ultimate decision?

I am not sure the Congress itself is not the ultimate decisionmaker as to a port of this kind.

I am wondering if we are not going through a State rights and illusion of private enterprise when we try to set up a mechanism of this kind.

Would you care to comment?

Mr. TRAIN. Those are legitimate points you have raised, but I do not think this is an illusory process at all. I think it is important to accommodate insofar as it is practicable to do so, for the interests and the interests of the private sector..

Mr. McCLOSKEY. Would you yield there for a minute?

Compare that with the Alaskan situation. This is precisely what we asked the consortium of the oil industry on the North Slope to do.

They have done it, and they have gone through an expenditure of $400 billion.

Now, it is the situation in Congress, either approving the pipeline or disapproving it, or asking for a new study as to whether the TransCanadian route can be considered.

If there is any study, we have not see it.

Industry was apparently led by Government to believe they could complete the Alaskan pipeline. We are faced with a crucial decision.

Are we not facing the same procedure here?

Mr. TRAIN. Let me say I do not think industry ever had any assurances with respect to the Alaskan pipeline whatsoever from Government in advance.

Mr. MCCLOSKEY. You think they would do it again without such assurances?

Their testimony here is that industry will not make an application, will not invest the money. This is going to take a geological study, ocean studies.

Do you think industry is about to invest the money to determine where the best location would be without some prior assurance that there will not be another Alaskan problem?

Mr. TRAIN. I do not think you are talking in terms of investment in locating an offshore site anywhere near the magnitude involved in purchasing the Alaskan pipeline.

In Japan, it is true that hundreds of millions of dollars were invested in that pipeline, which is a line still unused in Alaska, but I do not see anything of that sort involved here at all.

I do not think the process being used here is unreasonable at all.

There are important market and economic determinations to be made and and weighed, and it is our belief that to a great extent this can most profitably come from those who have the direct stake in this. And that is from the private sector.

Mr. MCCLOSKEY. Thank you, Mr. Chairman.

Mr. DOWNING. Counsel has a question.

Mr. HEYWARD. I will be as brief as I can, Judge Train, because of the time.

It is my understanding that the number of offshore ports needed to handle the increased oil quantity is very limited. Would you not agree?

Mr. TRAIN. Yes.

Mr. HEYWARD. We are talking, are we not, in terms of maybe five to six at the most?

Mr. TRAIN. I would guess at the most.

Mr. HEYWARD. One thing I do not want to talk about is this specific bill that the administration has proposed, because it is in another committee, but I would like to talk about the administration's viewpoint.

In connection with the proposed Department of Energy and Natural Resources, would not any features of legislation, prior to the creation of that department, which impinged upon the ultimate responsibility of that department automatically transfer to that department at the time the department was created?

Mr. Train. Yes; I presume so.

Mr. Heyward. So that there would not be a real bar to some other approach at this time until the time the department comes into being, is that not so?

Mr. Train. There is certainly no bar. Right.

Mr. Heyward. In connection with the permit authority under the administration's proposal, aside from the departmental sensitivities on jurisdiction, one thing that bothered me in the proposal was the proposal specifically provided for extending to these offshore ports and terminals the Federal Water Pollution Control Act provision which EPA administers, Port and Waterway Safety Act which the Coast Guard administers, the Marine Protection and Sanctuaries Act, again EPA, and various provisions involved in living resources protection administered by NOAA.

Would it not be simpler to authorize the Secretary of Interior, because there is present involvement in Outer Continental Shelf oversight, over present structures, leasing control, as the one to issue the original permit but not to issue operational regulations but rather apply the regulations which already exist in all these other areas of law?

In other words, I see no reason, if we are talking about protecting water quality, and you want to put that part of the Federal Water Pollution Control Act onto the platforms, wherever they may be, why the Secretary of Interior should issue any regulations concerning water quality when EPA is handling it already.

Mr. Train. I do not think that is intended, Captain Heyward.

The provisions of all of these statutes which you have mentioned and others are extended to this deepwater port facility by the proposed legislation.

The Secretary would develop regulations governing operations to the extent primarily to protect the environment.

The ones that he would be requiring presumably would be outside of the scope of other authorities to which I have referred.

Mr. Heyward. Well, then, would you say that the administration would agree with legislation which gave necessary extra regulatory power to the Secretary but would not supersede present regulatory authorities in the whole broad span of these laws which we are talking about?

Mr. Train. It is not my understanding that the bills calls for superseding those authorities.

Since you raise the question, I would ask, Mr. Chairman, for permission to look at this question and respond in writing to the committee because I am really somewhat confused as to exactly how the bill operates in this area now.

[The information supplied follows herewith:]

H.R. 7501 does not supercede existing regulatory authorities. In fact, Sec. 111(a) applies all laws and treaties of the United States to "deepwater port facilities licensed under this Act, and ... to activities connected with the operation and use of such deepwater port facilities in the same manner as if the facilities were located in the navigable waters of the United States." Section 111(b) lists, for purposes of emphasis, a number of specific laws which would apply including, for example the Federal Water Pollution Control Act, the Clean Air Act, and the Ports and Waterways Safety Act.

Mr. DOWNING. I can understand, and the witness will do that.

Additional questions will be submitted to you in writing at a later date.

[The questions and answers follows:]

Question (1).—Assuming enactment of H.R. 7501 or similar legislation, provide an analysis of the cost to the Council on Environmental Quality to administer its responsibilities under the bill in terms of monies and personnel. Also provide information as to what the role and responsibilities of CEQ will be under H.R. 7501 and how CEQ will implement and fulfill these responsibilities.

Answer (1).—H.R. 7501 does not give the Council any new or extraordinary responsibilities calling for special funding or personnel. If this, or similar, legislation is passed the Council will play its usual advisory and consultative role in the development of a program implementing the law, in the consideration of applications for deepwater ports, and in the review of associated environmental impact statements. We do not expect that the Council will have a continuing role in monitoring port operations.

Question (2).—On page 184 of the transcript, Russell Train indicated that portions of the CEQ environmental analysis study were still being prepared and would be available for release sometime in the latter part of the summer. Provide for the record a subject matter listing of those portions remaining to be completed, a status report on completion, those agencies, individuals, or outside consultants conducting such studies, and the time such shall be available for Committee analysis.

Answer (2).—The Arthur D. Little Company contract study on the onshore, or secondary, effects of deepwater port development is now at the printer. We expect publication and distribution within the next two weeks or so. A major conclusion of the ADL study is that the onshore environmental effects at any one location could be significantly reduced by dispersing refineries and ports. The Department of Transportation is currently studying for CEQ the economic impact on the cost of refined products of dispersed versus concentrated refinery capacity/deepwater port scenarios on the East Coast. When the DOT analysis is completed, later this month, or early in October, the Council will prepare a report summarizing the findings of the various detailed studies conducted for it on deepwater ports.

Question (3).—Provide a legal analysis of the relationship between H.R. 7501 or similar legislation which may be enacted and the National Environmental Policy Act. Should some specific provision in such legislation be added pertaining to this relationship? If so, kindly submit appropriate language.

Answer (3).—H.R. 7501 requires that an environmental impact statement be prepared by the Secretary before granting any permits for deepwater ports. It further requires that the Secretary's statement shall be sufficient to cover any other actions by agencies outside of the Department of the Interior relating to the decision to locate and construct a deepwater port. In essence, the bill legislatively designates the Department of the Interior as the lead agency in preparation of the environmental impact statement. This is a concept which the Council has encouraged for some time, most recently in Subsection 1500.7(b) of its revised guidelines for the preparation of impact statements (copy attached). We feel that the language in H.R. 7501 is appropriate for this purpose.

EXECUTIVE OFFICE OF THE PRESIDENT,
COUNCIL ON ENVIRONMENTAL QUALITY,
Washington, D.C., August 2, 1973.

Memorandum for heads of agencies.

Subject: Revision of agency procedures for preparation of Environmental Impact Statements.

On Wednesday, August 1, 1973, after extensive consultation with interested agencies and opportunity for public comment, the Council issued revised guidelines for the preparation of environmental impact statements pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA). Attached is a copy.

Section 1500.3(a) requires agencies to revise their NEPA procedures for preparation of impact statements so that they conform with the Council's revised guidelines. This requirement applies to procedures issued at both the departmental and sub-departmental level. Attachment A to this memorandum is a list of some of the major changes between the Council's new guidelines and its April 1971 guidelines that should be considered by your staff. The Council's staff will contact your staff in the very near future to arrange for timely consultation, pursuant to the requirements of Section 1500.3(a), on the specific changes required in your agency's procedures.

The effective date for the new guidelines (incorrectly listed in the *Federal Register* as a result of a typesetting error as January 28, 1973) is January 28, 1974. Revised agency NEPA procedures are required to be published in the *Federal Register* in proposed form for public comment before November 1, 1973, and in final form no later than January 28, 1974. Draft and final impact statements filed with the Council after that date are formally subject to the requirements of the new guidelines.

The Council strongly recommends, however, that agencies adopt several of the new provisions (listed in Attachment B) on an interim basis, within the next 45 days. These new provisions are aimed at more effectively involving the public in the impact statement process; none of them should entail significant administrative burdens.

Attachments.

RUSSELL E. TRAIN,
Chairman.

Attachment A

MAJOR CHANGES BETWEEN NEW CEQ REVISED NEPA GUIDELINES AND PREVIOUS APRIL, 1971 GUIDELINES ON THE PREPARATION OF ENVIRONMENTAL IMPACT STATEMENTS

The CEQ revised NEPA guidelines issued August 1, 1973 include the following major provisions not contained in its previous April, 1971 guidelines:

1. Agencies, in terms of their particular programs, should prepare guidance on those types of actions likely to require preparation of an impact statement, and those types of actions not likely to require preparation of a statement. Guideline § 1500.6(c). For those actions likely to require preparation of a statement and those actions that may require preparation of a statement depending on the circumstances, agencies should identify what basic information needs to be gathered, how and when it is to be assembled and analyzed, and on what bases a decision whether to prepare a statement will be made. Guideline § 1500.6(c)

2. Agencies should be alert to the need to prepare, in appropriate cases, program statements and statements on a group of interrelated projects. Agencies engaging in major technology research and development programs should develop procedures for periodic evaluation to determine when a program statement is required for such programs. Guideline § 1500.6(d)

3. Agency procedures should include an early notice system for informing the public of decisions to prepare impact statements, and include provisions apprising the public of agency determinations, in certain situations set out in the guidelines, that impact statements are not required. Guideline §1500.6(e)

4. Agency procedures should include provisions limiting actions which an applicant is permitted to take prior to completion and review of the final statement with respect to his application. Guideline § 1500.7(a)

5. Additional guidance on when public hearings should be held is included, and agencies are called upon to set out their policies and practices on hearings. Guideline § 1500.7(d)

6. More detailed guidance is given on the required contents of impact statements. Statements should set forth *inter alia*, the purpose of the proposed action, the relation of the proposed action to land use plans, policies, and controls for the affected area, secondary environmental effects likely to result from the proposed action, and an indication of what other interests and considerations of Federal policy are thought to offset the proposed action's adverse environmental effects. Agencies should consider in their impact statements, where appropriate, alternative designs or details of their

proposed actions which would significantly conserve energy. Guideline §1500.8 (a)

7. Areas of environmental impact are grouped into three major categories: (1) pollution, (2) energy supply and natural resources development, and (3) land use and land management. Each of these categories is divided into particular types of environmental impacts with respect to which agencies are requested to give special attention. Guidelines—Appendix II.

8. Agency procedures should facilitate public participation in the impact statement process. Guidelines § 1500.9(d) and 1500.11(d) Agencies should provide impact statement materials free of charge, to the extent practicable, or at a fee which is not more than the agency's actual reproduction costs. Guideline § 1500.9(d)

9. Increased guidance is given on the responsibilities of agencies in commenting on impact statements. Guideline § 1500.9 (e)

10. The minimum period for review of draft impact statements is 45 days. Agencies should consider the magnitude and complexity of the statement and the extent of citizen interest in the proposed action in deciding on an appropriate comment period for a particular statement. Guideline § 1500.9(f)

11. The minimum period for review of an impact statement is calculated from the date of publication in the *Federal Register* of the Council's listing notifying the public of issuance of the impact statement. Guideline § 1500.11(c)

12. Agencies should send copies of their final statements to all parties who filed substantive comments on the corresponding draft statement. Guideline § 1500.10(b)

13. Agency NEPA procedures should ensure that the final impact statement and comments "accompany the proposal through the existing agency review processes." Guideline § 1500.11(b) In this connection agency NEPA procedures for major categories of agency action should identify what these agency review processes are. Guideline § 1500.3(a)

14. Agencies shall respond to requests from the Council concerning their impact statement operations including requests for the production of either an impact statement or a negative determination that an impact statement is not necessary. Guideline § 1500.11(f)

Attachment B

Provisions of the Guidelines Recommended for Agency Implementation by September 15, 1973

The Council strongly recommends that the following provisions of its new NEPA guidelines (38 *Fed. Reg.* 20550, Aug. 1, 1973) be implemented on an interim basis, no later than September 15, pending formal revision of individual agency NEPA procedures:

1. Agencies should maintain lists of their impact statements under preparation, and their determinations that certain specific proposed actions do not require the preparation of an impact statement. Guideline § 1500.6(e)

2. The minimum period for review of draft statements should be lengthened from 30 days to 45 days. The length of the review period should be calculated from the date of publication in the *Federal Register* of the Council's listing notifying the public of issuance of the impact statement. Guidelines § 1500.9(f) and 1500.11(c)

3. Agencies should endeavor to provide impact statement materials free of charge, to the fullest extent practicable, or at a fee which is not more than the agency's actual reproduction costs. Guideline § 1500.9(d)

4. A copy of the final impact statement for a proposed action should be sent to all parties who filed substantive comments on the corresponding draft statement. Guideline § 1500.10(b)

Mr. Downing. The committee wishes to thank you for a significant contribution, and we do appreciate your presence.

Mr. Train. Thank you, sir.

Mr. Downing. Our next witness will the Honorable Howard W. Pollock, Deputy Administrator, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

We will also hear from H. Clayton Cook, Jr., General Counsel for the Maritime Administration.

Mr. POLLOCK. How would you like us to proceed?

Mr. DOWNING. Suppose you proceed first, Mr. Pollock, and then we will hear from Mr. Cook.

STATEMENT OF HON. HOWARD W. POLLOCK, DEPUTY ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. POLLOCK. It is always a pleasure to be back with my old committee and former colleagues.

I am pleased, as usual, to be able to appear before you to represent the National Oceanic and Atmospheric Administration. I want to join with my colleague from MarAd in complimenting the committee for its concern about the environmental implications of offshore ports.

Mr. Chairman, as has been stated, the Department of Commerce opposes the enactment of these bills while, at the same time, we encourage the members of this committee to support enactment of H.R. 7501, an administration bill which treats in comprehensive fashion the factors impinging on the siting, development, and operation of offshore port facilities.

In response, Mr. Chairman, to your specific request that Department witnesses address the question of potential impact of these proposed facilities on the marine environment surrounding them, I would like to make a very brief general statement.

One of the major environmental concerns related to artificial structures is the effect such structures will have on living marine resources. We are already exercising responsibility under existing law with respect to the effects of any artificial structure located on our coast, through the Fish and Wildlife Coordination Act which requires consultation with the Secretary of Commerce, acting through NOAA. This act applies when any Federal agency engages in activities involving issuance of licenses or permits which modify bodies of water in a way that could affect conservation of living resources. The National Marine Fisheries Service provides a central focus of understanding of fisheries and marine biology. NOAA is also engaged in extensive research on marine pollution, including additional responsibilities imposed by the recently enacted Marine Protection, Research, and Sanctuaries Act.

NOAA's expertise with respect to the marine environment, however, is far broader than living resources. For example, NOAA components, such as the National Ocean Survey and the Environmental Research Laboratories, have extensive programs dealing with tides, currents, and atmospheric effects on the ocean. Thus, we are able to determine if a site being considered for a deepwater port facility is one where discharge will be carried shoreward to damage shoreline organisms and to spoil coastal amenities. Similarly, the expertise of NOAA in ocean dynamics could aid in siting artificial structures so as to minimize interference with bottom sediment transport, nutrient flow, and the ability of a body or area of water to assimilate pollutants.

Our NOAA fleet of oceanographic vessels provides unparalleled operational capabilities to undertake the necessary marine investigations. Our sea grant program, involving more than 100 institutions and some 1,790 scientists and engineers, would also be a key resource and capability in any such endeavor. It represents a major national resource for investigating ocean-related problems of a wide range and nature. It is invaluable in the resolution of regional and local problems in which the expertise of institutions directly associated with the area is available. We have been able to draw upon this resource to provide knowledge which is essential in decisions relating to the management of coastal areas. For example, recently the Council of Environmental Quality requested NOAA, and we turned to our own Office of Sea Grant, to conduct a study and analysis of the environmental problems which might be generated by deepdraft tankers and offshore port facilities at specific sites in the United States. The Sea Grant institutional network reviewed the problem and we delivered the report to CEQ in March.

We are aware that the task of predicting environmental impact of proposed offshore structures can become a major one in future years as the number of proposals increases. However, we believe that the resources within and available to NOAA provide a basic nucleus from which national capability to accomplish this task can emerge.

We would like to point out that under the administration's bill, H.R. 7501, NOAA will play a major role in the development of offshore port facilities through the application of our particular capabilities to the siting problem, primarily in the areas of environmental science and technology. NOAA has much to offer and, as one of the Government's central focuses for Federal ocean programs, we are dedicated to fulfilling the admonition of President Nixon, transmitted to the Congress in Reorganization Plan No. 4 of 1970, in which he stated:

> We also face a compelling need for exploration and development leading to the intelligent use of our marine resources * * * We must understand the nature of these resources, and assure their development without either contaminating the marine environment or upsetting its balance.
>
> Establishment of the National Oceanic and Atmospheric Administration—NOAA—within the Department of Commerce would enable us to approach these tasks in a coordinated way.

Mr. Chairman, we feel the President's words are especially meaningful within the context of offshore port development and operation. Nowhere is it more important for us to carefully consider the effects of man's activities on nature's ecological balance.

At the time of the creation of NOAA by Reorganization Plan No. 4 in 1970, the administration made a decision to retain within the Department of Interior those functions relating to its present authorities under the Outer Continental Shelf Lands Act. Under that act, the Secretary of Interior is responsible for issuing licenses to construct offshore platforms and facilities for development of oil and gas resources. Under H.R. 7501, the functions of the Secretary of Interior, with regard to constructing offshore port facilities, are closely related to the construction of oil platforms. NOAA's performance of its responsibilities for the protection of the marine environment is fully compatible with the assignment to Department of Interior of responsibilities under H.R. 7501.

Under H.R. 7501, all of NOAA's current and future responsibilities for the protection of the marine environment, as well as other essential functions, are extended to the process of licensing and supervising the operation of deepwater port facilities. In no way is the authority of our agency diminished or impeded by enactment of H.R. 7501. Although the Department of Interior would actually grant the license, all other agencies with responsibilities relating to deepwater ports will participate fully, including NOAA.

Mr. Chairman, we would like to express appreciation for the committee's continuing leadership in developing programs to understand, manage, and protect the marine environment. We stand ready to work with your committee in the future development of legislation toward that objective.

We strongly support H.R. 7501, and believe that it provides a sound basis for the exercise of our responsibilities should deepwater port facilities be constructed.

Mr. Chairman, thank you for the opportunity to present my prepared statement.

I wonder now if we might hear the testimony of MarAd before the questions, and then we might respond to the questions of the committee, if this is in order.

Mr. DOWNING. That would be in order.

I want to thank the gentleman for a fine statement.

Off the record.

[Discussion off the record.]

Mr. DINGELL. Mr. Chairman, I have to leave, and I want to commend my good friend. He continues to amaze me. He did a fine job in Congress and is handling his present job very well.

Mr. POLLOCK. Thank you.

Mr. DOWNING. Mr. Cook, suppose you proceed.

STATEMENT OF H. CLAYTON COOK, JR., GENERAL COUNSEL, MARITIME ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. COOK. Mr. Chairman, members of the committee, I appreciate this opportunity to appear before your committee to testify with respect to deepwater port facilities and H.R. 5091 and H.R. 5898.

The purpose of H.R. 5091 is to amend the Marine Protection, Research and Sanctuaries Act to provide for the protection of marine environment from unacceptably adverse impacts caused by the construction and operation of large-scale offshore structures, including deepwater port facilities, by prohibiting the construction of such structures in the absence of prior certification by the Secretary of Commerce.

Under the proposed legislation, the Secretary could issue his certification with respect to any such structure only if all possible precautions had been taken to protect the marine environment, and he would be required to deny such certification if the facility were adjudged by the Secretary to pose an unreasonable threat to the integrity of the marine environment.

The purpose of H.R. 5898 is to amend the Merchant Marine Act, 1936, to provide that no port or terminal facility could be constructed, operated, or maintained by any person beyond the territorial waters of the United States unless such person had obtained a permit for that purpose from the Secretary of Commerce.

In issuing that permit, the bill provides that the Secretary of Commerce should take into consideration: (1) The need for such port or terminal facility as a means for supplying the energy needs of the Nation; (2) the environmental impact of any such port of terminal facility; and (3) the availability of alternative sites and methods of construction.

The bill also provides that the Secretary would conduct such public hearings as he determined necessary to assure thorough consideration of these factors.

On April 18, 1973, the President submitted to the Congress his message concerning energy resources. In that message he stated with respect to the development of deepwater ports:

> It is clear that in the foreseeable future, we will have to import oil in large quantities. We should do this as cheaply as we can with minimal damage to the environment. Unfortunately, our present capabilities are inadequate for these purposes.
>
> The answer to this problem lies in deepwater ports which can accommodate those larger ships, providing important economic advantages while reducing the risks of collision and grounding. Recent studies by the Council on Environmental Quality demonstrate that we can expect considerably less pollution if we use fewer but larger tankers and deepwater facilities, as opposed to the many small tankers and conventional facilities which we would otherwise need.
>
> If we do not enlarge our deepwater port capacity, it is clear that both American and foreign companies will expand oil transshipment terminals in the Bahamas and the Canadian Maritime Provinces. From these terminals, oil will be brought to our conventional ports by growing numbers of small and medium size transshipment vessels, thereby increasing the risks of pollution from shipping operations and accidents. At the same time, the United States will lose the jobs and capital that those foreign facilities provide.
>
> Given these consideration, I believe we must move forward with an ambitious program to create new deepwater ports for receiving petroleum imports.

On that same day, the Secretary of Interior, in an Executive communication addressed to the Speaker of the House of Representatives, submitted a draft of the administration bill, subsequently introduced as H.R. 7501, which would authorize the Secretary of Interior to license and regulate the construction and operation of deepwater port facilities.

In that letter, the Secretary of Interior noted that:

> Regardless of the policies adopted to increase domestic supplies, imports of crude oil and products into the United States are projected to probably double by 1980 and could continue to increase dramatically in succeeding years.
>
> Most United States sports, already heavily congested, are not equipped to handle this increased trade. With few exceptions, the largest ship which can enter United States sports fully loaded is 65,000 deadweight tons (DWT). (Compared to the new deep draft tankers which are now being built in excess of 200,000 DWT.) The use of small vessels is the least desirable method of importing large quantities of crude oil and products into the United States, both because of environmental and economic considerations.

> As imports of crude oil and products increase, our conventional ports will become more congested and the risks of collision and grounding will increase.
>
> The bill we are proposing would remove any legal impediments to the development of * * * deepwater terminals off the United States coast by establishing authority in the Department of the Interior for licensing the construction and operation of ports beyond the three-mile limit. This process would include strict environmental controls and specific provision for navigation and safety. Licenses would be issued to any United States citizen, domestic corporation, State or local government when the Secretary finds that the applicant is financially responsible and has demonstrated an ability and willingness to comply with all applicable laws and conditions. Prior to issuing any license, the Secretary is required to consult with the Governors of adjacent coastal States to insure that the facility and its directly related land based activities would be consistent with the States' land use planning programs.
>
> The license required by this Act would be additional to permits or licenses which may be required under existing legislation from other Federal agencies. However, the proposed bill provides a mechanism whereby all Federal permits necessary for the construction of the deepwater port facility will be handled through a single application filed with the Interior Department. This Department will be responsible for ascertaining that the other Federal agencies with jurisdiction over the construction of the facility have given necessary approvals.

The Department of Commerce supports the administration determination that energy and land use considerations of the deepwater port facilities are primary. Within the administration the Department of Interior has and will have primary responsibility for energy matters and, as well, the responsibility for the licensing of offshore structures, such as drilling and production platforms and oil gathering pipelines and, under proposed legislation, for coordination of State land use planning.

We believe, all factors considered, that the Department of Interior can probably best coordinate the energy, land use, and other considerations most relevant to deepwater port facilities to insure balancing of both onshore and offshore environmental effects.

We look forward to working with the Department of Interior and other responsible agencies in reviewing specific proposals, should the Congress enact H.R. 7501.

We are opposed to enactment of either H.R. 5898 or H.R. 5091 because these bills would place the licensing authority for deepwater port facilities in the Department of Commerce rather than in the Department of the Interior.

Industry has recognized the need for deepwater ports for at least several years. And a number of projects have been initiated by major oil companies to develop deepwater offloading facilities at specific sites.

The reaction of the adjacent affected States has been mixed, with, for example, Delaware banning an oil transfer facility under its Coastal Zoning Act, while the Louisiana Governor appointed a superport task force to facilitate efforts to establish a deepwater port facility off the Louisiana coast.

While we recognize that responses may vary from State to State, we are hopeful that all citizens will recognize the need for deepwater port facilities, and the fact that the import of petroleum through such facilities is preferable, both economically and environmentally, to the import of petroleum in smaller ships using existing conventional port facilities. Without regard to the nature of the State responses to proposed projects, however, industry has been unwilling to act until issues concerning Federal jurisdiction beyond the 3-mile limit have been resolved. And Federal legislation is accordingly a necessity.

Along with our desire to promote efficiency and reduce costs associated with U.S. foreign trade, the Department of Commerce has a parallel responsibility for the conservation of marine resources and the development of coastal zone management programs.

Approvals of particular site locations must consider the role of the coastal zone as a nursery for many important commercial and sport fishes, as an important source of mineral wealth and as a recreational haven.

The National Oceanic and Atmospheric Administration, as the prime environmental arm of the Commerce Department, is prepared to continue to exercise its authority and work closely with the Department of Interior in this matter.

The deepwater port legislation proposed in H.R. 7501 makes clear the administration's basic position. The bill provides authority to issue licenses and to prescribe rules and regulations pertaining to the construction and operation of deepwater ports.

Industry will require further clarification of the criteria for issuing licenses, and of the nature and extent of the rules and regulations that will apply, before proceeding with deepwater port development.

I am certain that the Department of Interior will be developing this information for industry so that licenses can be granted as soon as H.R. 7501 is enacted into law.

The Department of Commerce intends to assist the Department of Interior in performing its responsibilities under the proposed legislation. By working together, I am hopeful that we can accelerate the process of providing the country with the deepwater ports that are required.

This concludes my statement, and Mr. Pollock and I will be very happy to answer whatever questions the committee may have.

Mr. DOWNING. Thank you very much, Mr. Cook.

Mr. Pollock, we appreciate your praise of our continued leadership, and then you advocate putting in a completely different agency.

There is a jurisdictional problem here. The superport is located in the ocean and, yet, you want to put it under the Department of Interior.

It is not possible that there can be split jurisdiction on this matter, the Department of Interior would have the responsibility of issuing the licenses and selecting the locations and other matters and, at the same time, the Department of Commerce and others would have jurisdiction over those affairs relating to navigation, waters, and such matters as that?

Is that not a possibility?

Mr. POLLOCK. Mr. Chairman, I want to answer as fully and as directly as I can.

First, I want to make the comment that I think one of the purposes stated in the bill was to create one entity of Government where people could go to get one kind of a license which then would have to be processed through all of the other agencies of the Government having applicable responsibilities under existing law.

I call your attention to page 7. I believe it is section 104(b), as an example; it says in carrying out all of his functions under the Act, the Secretary shall consult with all interested or affected Federal agencies, the Secretary is authorized to utilize, on a reimbursable basis, the full resources of the Federal Government in ocean engineering and undersea technology for determining the purposes of standards and criteria for all facilities licensed under the act. This authorization requires the Secretary of Interior to consult, in this case, with NOAA.

I go down to the next subsection (c); in about the third sentence it says the Secretary will forward a copy of the application to those Federal agencies having jurisdiction. In this case, it is talking about any of the construction and operation aspects. Further, it says the Secretary will not issue a license under this act until he has been notified by such agencies that the application meets the requirements of the laws which they administer.

In subsection (d) of section 104, it talks about the requirement for an environmental impact statement, meaning that each of the agencies, including the Department of Commerce, would have to be consulted.

I think the way the act was written, in the final analysis, the decision would have to be made by the Secretary of Interior. I suppose he could disregard any of the admonitions of the Department of Commerce. I doubt that that would happen in practice.

If we found that the fish and sea life, the living organisms of the ocean, were going to be detrimentally affected because of the particular placement of a port location, I think he probably would adhere to this.

Mr. DOWNING. The committee will have to answer the quorum.

Is it possible for you to come back at 2 this afternoon?

Mr. POLLOCK. I believe, Mr. Chairman, I have to be at another hearing. I am not sure when it is.

I will do my best.

Mr. DOWNING. Not if you have another commitment.

Mr. COOK. I will be available.

Mr. SNYDER. I am going to be on the highway conference this afternoon.

I would like to pose one question, and you can answer for the record.

I thank you for your statement, Mr. Pollock. Glad to see a former Congressman testifying that knows what this game is all about.

I understand your shop has jurisdiction over the Coastal Zone Management Act of 1972.

Assuming it might be funded, I would like for you to give us an answer as to what safeguards are built into the regulations which, I understand, you released in the last day or two, for States, assuming they do not have this veto power that has been discussed in the testimony.

Mr. POLLOCK. I understand the request of the gentleman from Kentucky that he wants this submitted in writing for the record?

Mr. SNYDER. Yes, so we can answer the quorum call.

Mr. POLLOCK. I will be happy to do it.

I should say to the gentleman that there is a requirement under the Act——

Mr. DOWNING. Let us answer that for the record.

We must go.

[The information follows:]

RELATIONSHIP OF COASTAL ZONE MANAGEMENT PROGRAMS TO OFFSHORE DEVELOPMENT

A number of the coastal states are moving ahead under their own stimulus to develop coastal zone management programs in advance of Federal funding.

There are important relationships between state and coastal zone management programs and implementation of the proposed deep water port legislation. These relationships stem from the fact that deep water ports can have significant secondary impact on the regions in which they are located. The refineries and petro-chemical complexes usually associated with superports will require substantial quantities of land in the coastal zone. Such facilities require substantial water supplies. The population increases attracted to these complexes will exercise the demand for public services such as roads, schools, and sewage facilities. The best means of preparing for these impacts will be through effective state planning. With effective state planning, these secondary effects of offshore port development can be provided for in an orderly fashion. Conversely, state plans and programs which do not provide for proposed offshore port development could pose major impediments to the construction of such facilities.

The Administration's deep water port facilities bill recognizes and makes provision for these relationships:

(1) Section 103 (e) of the proposed legislation provides that the Secretary of the Interior "shall consult with the Governor of any State off whose coasts the facility is proposed to be located to determine whether the operation of the facility and directly related land based activities would be contrary to the state land use planning program."

(2) Section 111 (a) of the Administration's bill provides that the laws of the United States shall apply to deepwater port facilities licensed under the Act "in the same manner as if the facilities were located in the navigable waters of the United States." That Section further provides "to the extent they are applicable and not inconsistent with the Act, or with other Federal laws and regulations now in effect or hereafter adopted, the civil and criminal laws of the nearest State are declared to be the law of the United States for such facility." This means that the provisions of the Coastal Zone Act governing Federal actions, such as section 307(c)(1) which requires that Federal agencies conducting or supporting activities directly affecting the coastal zone shall conduct them in a manner which is to the maximum extent practicable, consistent with approved State management programs, are applicable to deepwater ports licensed by the Federal Government. It does not mean that State jurisdiction is extended beyond the three mile limit to deepwater port facilities. Section 111(a) was not intended to extend State jurisdiction.

(3) Section 112 provides "facilities connected to a deep water port facility licensed under this Act such as pipelines and cables, which extend above and into submerged lands or waters subject to the jurisdiction of any State or

possession of the United States, shall be subject to all applicable laws or regulations of such State or possession to the extent not inconsistent with Federal law or regulations."

The Coastal Zone Management Act of 1972 contains important provisions relating to this issue:

(1) Section 306 (c) 8 provides that in approving a state coastal zone management program, the Secretary of Commerce must determine that "the management program provides for adequate consideration of the national interest involved in the sitting of facilities necessary to meet requirements which are other than local in nature."

(2) Section 307 contains provisions calling for coordination between the State government and the Federal government when the State is developing and submitting for Federal approval a coastal zone management program. These include provisions for mediation by the Secretary of Commerce in cooperation with the Executive Office of the President of serious disagreements between Federal agencies and the states in developing a program.

(3) Section 307 also provides that once state management programs have been received for Federal approval, Federal agencies conducting or supporting activities directly affecting the State's coastal zone are required to conduct or support those activities in a manner which is to the maximum extent practicable consistent with the approved state program. Further, after final approval of a state's coastal zone management program, any applicant for a required Federal license or permit to conduct an activity affecting land or water uses in the coastal zone of that state must certify that the activity complies with the state plan. The state concerned is afforded full opportunity for review of such certifications. State concurrence in the proposed activity is required unless the Secretary finds that the activity is consistent with the objectives of the Coastal Zone Management Act or otherwise necessary in the interest of national security.

Thus, we believe that the provisions of the proposed deep water facilities bill and those of the Coastal Zone Management Act of 1972 reflect the same intent. That is, deep water port facilities and their attendant onshore development should be consistent with state planning and programs. Conversely, State plans to receive Federal approval should make provision for facilities which are required in the broader national interest. We believe that these objectives can be met through careful planning and program coordination.

Mr. POLLOCK. Mr. Chairman, I would also like to say we would be happy to come back any other time you might wish.

Mr. DOWNING. Thank you, Mr. Pollock.

We will get in touch with you later.

You are excused and need not come back at 2.

We will recess until 2 o'clock this afternoon.

[Whereupon, at 12:05 p.m., the committee recessed, to reconvene at 2 p.m., the same day.]

AFTERNOON SESSION

Mr. DOWNING. The committee will come to order.

Mr. Cook, I understand that Mr. Pollock will try to return if possible, but we will proceed with our questioning of you.

Mr. Cook, in the invitation to testify which was extended to your Department by our Chairman, Mrs. Sullivan, it was indicated therein that we would like some reference to how these deep seaports will affect marine trade, the merchant marine, the maritime construction, and the so-called potential impact of these terminals on the marine environment surrounding them.

In your prepared testimony you did not touch on these subjects.

Is there any reason for that? Why did you not comment on these subjects?

Mr. Cook. Well, I think, Mr. Chairman, that I am in a position to comment on the questions or the subjects at this time, and would be in a position to further supplement those comments with a written submission for the record.

Mr. Downing. That would be fine. Are you prepared to testify on that now?

Mr. Cook. I think it might be useful, Mr. Chairman, to say a few words on that now, yes, sir.

Mr. Downing. Go right ahead.

Mr. Cook. At the Maritime Administration we have, certainly since even before the final passage of this 1970 Act, been aware of the fact that the basic thinking, or some of the basic thinking that went into the 1970 Act concerning tanker size was rapidly becoming obsolete.

We were aware, and then Assistant Secretary Gibson was aware that U.S. energy needs would require the import of very substantial volumes of oil, and that this, in turn, would be developing technology in increased tanker sizes could be expected to lead to a very real use of the larger tankers in the U.S. trade at such time as offloading facilities for larger tankers became available.

Our studies have shown that as Chairman Train indicated this morning, the cost of oil transportation in VLCC's is something less than half of the cost of oil transportation in medium sized tankers looking at the run from the Persian Gulf to the U.S. East and Gulf Coasts.

The first title 11 commitment which was made by the Maritime Administration on a so-called VLCC, a tanker of the 225,000 deadweight ton class was made in December of 1969.

The first CDS commitments were made in June of 1972.

As of this date, we have over $180 million of title 11 guarantee authority committed with respect to VLCC's of the 225,000 and 265,000 deadweight ton classes, and we have committed construction differential subsidy funds of almost $170 million to the construction of those vessels.

These commitments were made with a realization that port facilities adequate to accept these tankers in U.S. import trades did not exist, but with the full expectation that such facilities would, within a reasonable time period, exist in view of the energy needs of this country, the limitations of domestic production and the economics of oil transportation.

These vessels then have formed and are forming an important part of the Maritime Administration's program under the 1970 act.

A decision by the administration and by the private sector to go forward with offloading facilities for deep draft tankers is of vital importance in the context of this program at the Maritime Administration.

Obviously, our planning there, we will not continue to give title 11 authorization and commit CDS funds to tankers which cannot be used in the U.S. trade, because adequate port facilities are not available. We anticipate that the facilities will become available.

I think perhaps, Mr. Chairman, I would like to then further amplify my answer to you in writing.

Mr. Downing. That will be perfectly all right.

[The additional information supplied follows:]

The position of the Maritime Administration is that such offshore facilities are necessary and desirable. Our merchant marine program since the 1970 Act has recognized this.

The impact of such facilities upon the merchant marine industry has been considered. I have already mentioned the commitment which we have made for the construction of VLCC's, with the resultant benefit to U.S. shipyards and related industries. The environmental impact of such facilities has also been considered. The types of terminals now under most active consideration are mono-buoy moorings, at 100-foot depths, located over 20 miles offshore, which will require no dredging. Studies made by the Council on Environmental Quality indicate that the impact of these moorings on marine environment is small; no significant sedimentation occurs, and ocean current is unaffected. In the event of a spill, their distance from shore would make it unlikely that any adverse effect would occur in the sensitive estuarine areas.

Mr. Downing. Tell me, Mr. Cook, if the VLCC's reduce the cost by nearly one-half as compared with the relatively smaller tankers, the 500,000 deadweight ton tanker should even further decrease the cost, would it not?

Mr. Cook. Yes, sir; it would. The cost curve, or cost savings curve flattens out somewhat once you get up above, I believe it is, 200,000 deadweight tons.

A cost savings curve of this sort has appeared in several of our studies, the most recent appearance and discussion of this appears in the final environmental impact statement we issued with respect to the 1970 act program on May 29, but the curve does flatten out.

Still, there would be savings associated with transfer from the Persian Gulf to the United States in a tanker of say 500,000 deadweight ton size, and some commercial interests are actively considering construction of tankers of that size.

We have considered this carefully in connection with current program responsibilities and, for example, Todd in its plan for a new shipyard in Galveston, initially had a facility which would accommodate construction of tankers, I think, with a limit of around something over 300,000 deadweight tons, but Todd had revised their plans I think, at their own decision, certainly based upon talks with the Maritime Administration as well, so that the new facility that they plan to go forward with will have the capacity to take on tankers of up to 500,000 deadweight tons, and, of course, the sea dock and lube proposals as to the extent that information is available on them in the public sector, and based upon our discussions with the companies involved in those proposals, the sea docks and lube proposals both contemplate depths such as 500,000 deadweight ton tankers could be accommodated.

Mr. Downing. I should think that the larger carrier would be preferable if you had deepwater ports.

Thank you, Mr. Cook.

Mr. du Pont?

Mr. du Pont. Thank you, Mr. Chairman.

Mr. Cook, I appreciate your willingness to come to the committee and try to answer questions we have, because I think that I do not understand very well the role of the Commerce Department and MARAD developing offshore facilities.

One of the points that you really did not cover in your testimony was the Commerce Department's view as to the States' rights in locating these facilities.

Do you think the opinion of the States should be a factor in deciding their location?

Mr. Cook. Yes, I do.

Mr. du Pont. And would this normally be something considered by the Commerce Department in making recommendations on where to locate them?

Mr. Cook. Yes, it would. I would think that speaking in very practical terms that one would expect that a superport, a deep draft offloading facility, a monobuoy, whatever type of facility you wished to discuss would not be put in place by private interests off the shore of a State where the State was opposed to that facility being put in place.

Mr. du Pont. And would the Commerce Department more or less take that position in trying to give its opinion?

Mr. Cook. I would expect, Mr. du Pont, it would.

Mr. du Pont. Well, if that is true, Mr. Cook, I do not understand this report. Here is a study prepared in July of 1972 by MARAD in which MARAD concludes that the Delaware Bay is the place to put a superport.

This report was prepared 1 year *after* the Delaware Legislature enacted a law saying that we did not want superports, and there is not a single mention of that legislative decision in this report.

I do not understand how what you just said can be consistent with this beautifully prepared report by MARAD.

Mr. Cook. Well, I do not wish to make artificial distinctions. I think I should say, however, that while that report was contracted for and sponsored in that sense by MARAD, that the conclusions which are stated in the report are not necessarily MARAD conclusions.

Mr. du Pont. Well, now, are you saying that, to use the current term, in MARAD's opinion this is inoperative?

Mr. Cook. No, sir. I would not say it was inoperative.

Mr. du Pont. I understand you paid almost $200,000 by the time you are through to have this done, and is it being ignored now?

Let me put the question another way.

When you contracted this study, did it not occur to the Commerce Department—remember now, 1 year after Delaware passed its law—did it occur to the Commerce Department to suggest that factor of State preference at least ought to be one of the considerations included in the study?

Mr. Cook. Well, based upon your statement of the timing I should say, Congressman, that it certainly should have occurred to MARAD.

However, the Soros report was commissioned in March 1971, 3 months before the Delaware Coastal Zoning Act was enacted. By the time the report was finalized, in March 1972, the Delaware legislature had acted. I would agree with you, Congressman Du Pont, that the preference of the State of Delaware should have been a factor considered in the report. However, the prinicipal issue to which the report addressed itself was whether a deepwater terminal was economically feasible.

Mr. du Point. Well, now, your reply as to the Commerce Department not necessarily endorsing the conclusions of this report; this was a study prepared by Soros associates, but it is entitled "Executive Paper" of the U.S. Maritime Administration. I do not find any disclaimer in here that it is not the conclusion of the Commerce Department. This report concluded that Delaware Bay is where the superport ought to be, and that is documented all through here.

Here is a glorious picture, but just look at the sunset over Delaware Bay in full color. I do not know if the chairman has seen that. But I can see a loving couple walking along holding hands with a little child following. Then you find the Maritime Administration studied 32 different sites, and on page 24, when you review these sites, there is one paragraph devoted to the 32, and then there are five more paragraphs devoted to the five better sites, and then there are 15 pages on how Delaware Bay is going to be a magnificent place to put this facility, and there is a map showing where the superport ought to be located: right off of Rehoboth Beach.

Let me see if I can find it here.

There is the whole thing right there, a map of Delaware included, showing where the superport is going to be, and the question I would ask you is, is this report, or is it not, the view of the Commerce Department?

Mr. Downing. If the gentleman will yield, Mr. Cook is thinking.

Mr. du Pont. Be happy to let him think.

Mr. Downing. This report recommended within the confines of Delaware Bay was the proper place.

Mr. du Pont. 8 miles offshore, and they studied 32 sites, and 5 final sites, selected 1 of them just off the Delaware Bay, 2 within Delaware Bay, 2 more further north off New Jersey.

Mr. Downing. Thank you.

Mr. Cook. Thank you, Mr. Chairman.

Congressman du Pont, could you repeat your question?

Mr. du Pont. Is the position of the Commerce Department that the superport ought to be located in Delaware Bay? In other words, does the Commerce Department endorse this report, or does it not endorse it?

Mr. Cook. I will have to say it is not the position of the Commerce Department that the superport should be located in Delaware Bay, and to the extent, if that is a lack of endorsement of the report, I would say we do not endorse the report.

I think, though, that I should go back and reiterate that at the Maritime Administration, at the Commerce Department, at many Government departments, I am sure you have situations where research and studies are contracted for.

The chief officials of the agency involved may or may not agree with the results of the studies so contracted for.

In this particular instance you have a study contracted for which looks at U.S. oil import needs, the economics, and comes up with certain conclusions about in its own frame of reference of oil needs and economics, a certain ideal or preferred location.

As you have pointed out very well, the study does not deal with some of the realities and some very important factors that should be considered in terms of what the feelings of the people of the State of Delaware are on the subject.

Mr. du Pont. Well, I would hope, Mr. Cook, that we could have for the record a statement from the Maritime Administration as to whether the conclusion of this report is an official statement; as to whether the conclusion of this report is a conclusion of the Commerce Department with your seal on it recommending the port of Delaware Bay.

If that is not the recommendation, I think the committee ought to have that in writing from the department. Maybe you can supply that for the record.

Mr. Cook. Be very happy to supply what I trust will be a satisfactory response for the record.

Mr. du Pont. Thank you.

[The following was supplied for inclusion in the record:]

The position of this agency has been that there is a critical need for pollution-free deepwater terminals somewhere off the coast of the United States to accommodate existing and soon-to-be-built bulk liquid carriers which exceed the depth limitations of our U.S. ports.

Delaware Bay is one of many potential sites which have been considered in a variety of studies performed on behalf of industry and for state, Federal and foreign governmental agencies. The investigation into the feasibility of the construction of deepwater terminals off the coast of the United States conducted under contract by Soros Associates found that a site located outside Delaware Bay was preferable to several alternate locations within the Bay.

Our view is that the specific location of such a deepwater facility would have to be determined by technical, environmental and economic constraints, the wishes of affected coastline states, and legal and safety considerations. No final determination has been reached. Our efforts have been directed toward stimulating the process by which those interested in establishing a facility can bring the concept into reality. It is not, and has never been, the intent of the Department of Commerce to select a particular location.

Neither this agency nor the Soros Report concluded that the superport should be built in Delaware Bay. A location in Delaware Bay near Cape May was cited in the Report as being the "least cost" solution, but a location 8½ miles outside of Delaware Bay was cited as being economically and technically feasible and "a preferred site from the environmental point of view." Consequently, the latter site, located outside Delaware Bay, was the site given the greatest amount of detailed study.

While the analysis in the Soros feasibility study of a North Atlantic Deepwater Oil Terminal (NADOT) provided much valuable information, it did not bind the Department of Commerce in regard to location or type of facility. This research effort did not and does not preempt other efforts comparing alternative solutions to channel dredging. The Maritime Administration has made this clear in testifying at Regional Deep Draft Port Study public hearings held by the Corps of Engineers in New Orleans on April 19, 1972, in New York on Mary 25, 1972, and more recently in San Francisco on June 20, 1973. At all of these hearings, the Maritime Administration's support of a deepwater liquid bulk transshipment facility was enunciated without indicating any preference as to a particular site.

Mr. du Pont. Moving on to some other questions about this report, one of the things that Mr. Johnson—and I am not sure of his title—said when he testified on Tuesday, was that the most economic means of getting oil into this country was through monobuoys, and that was the result of his study.

The Corps of Engineers in the study they did on the feasibility of offshore facilities also considered monobuoys.

There are 100 monobuoys in operation at various places in the world, and there is nothing in this report about monobuoys. That would seem to me another oversight in preparing this report.

Mr. Cook. Well, perhaps, Congressman, our choice of experts may not have been as good as it should have been.

I think another factor, and I hesitate to get too deeply involved in this, because I do view it as technically beyond my competence, but I believe though another factor may be that at a given location one type of facility may be appropriate, whereas at another location another type facility may be appropriate.

It is my understanding that in the Gulf of Mexico with the loop project and sea dock project going forward there, that those will be monobuoy projects, and that a monobuoy can be expected to function very well in the Gulf of Mexico.

On the other hand, whether a monobuoy would function well off the coast of New Jersey or in the Delaware Bay, I am uncertain.

[The following was submitted for inclusion in the record:]

Mono-buoys were considered seriously in the initial stages of the study but were rejected for two reasons: first, such a system lacks the ability to contain oil spills in the absence of a breakwater; second, wave conditions were expected to limit berth availability at a mono-buoy to 60–70 percent in the North Atlantic, whereas a protected offshore platform could anticipate a berth availability of 90 percent or more. It was known that New Jersey had previously rejected a mono-buoy application at Long Branch and at Cape May, because a mono-buoy system was considered to be a threat to the beaches. To avoid a similar impasse, we required Soros to provide some positive means of containing oil spills. The most positive means of protection was believed to be the use of containment booms which require some degree of wave protection. This is not feasible at a mono-buoy in 100 feet of water.

This does not detract, however, from our full acceptance of mono-buoys at some sites because of the assurance provided in the Council on Environmental Quality study on offshore facilities. That study indicated that a facility 25 miles offshore would be sufficiently distant to prevent spilled oil from causing damage to the shore. We are, as a matter of fact, working with private industry to encourage improvements in design and operation of mono-buoys in deepwater to minimize the possibility of spills, and to maximize berth availability during inclement weather.

Mr. du Pont. Well, I appreciate your difficulty in answering some questions about this unusual report.

Among the 32 sites included in here are the gulf coast sites, and apparently the conclusion was that a monobuoy in Louisiana was not as good as an offshore terminal in the Delaware Bay. It confuses me.

Mr. Cook. Well, Congressman, I doubt that I will be able to resolve your dissatisfaction with the report here this afternoon.

I would like to respond along that point, to go back again to the fact that economic considerations, U.S. oil import needs and costs were factors which drove the conclusion in the minds of the people who prepared the report to their end result.

I am sure that among other things they may have taken into consideration the relative refinery capacity on the gulf coast versus the relationship of the refinery capacity to consumption in the northern United States.

Mr. du Pont. Well, I am sure you are not going to be able to resolve this report to my satisfaction this afternoon, but I think we might also have you supply for the record, if you will, how many of the taxpayers' dollars were consumed by Sorros Associates in preparing this report so that we can judge value we can get for our money on an objective scale.

Now, another problem, it seems to me, on pages 22 and 23 of this report, you describe, or the consultant describes in some detail the dangers and hazards associated with oil spills, and the damage that can be done to ecology by oil spills. We have had a parade of witnesses before this committee, and unanimously they have recommended that offshore oil terminals be built as far offshore as possible. This report lists all the dangers of oil spills, points out all the hazards, and then recommends building a port right smack up against the coast, not out on the Continental Shelf where everybody seems to recognize they ought to be.

Now, I do not understand that reasoning either.

Mr. Cook. I think I will have to respond to that for the record.

Mr. du Pont. All right, perhaps you would do that.

[The following information was supplied for the record:]

To respond to the first of your questions, Congressman DuPont, the total cost of the study including all amendments and supplementary material was $477,232.

Your second question relates to the recommendation of the Soros Report that the offshore facility be located close to the Delaware coast rather than further out on the continental shelf. A site 8½ miles off Cape Henlopen was selected for more detailed study because of certain natural features which made it suitable for such a facility. At that point, a 50 foot shoal exists on the seaward side of a natural trench with a depth of over 100 feet. Moreover, that site placed the terminal outside of the main shipping lanes and thus was considered desirable from the standpoint of minimizing the chance of collision. The adjacent shoal permitted economical construction of the rubble mound breakwater which was then considered necessary to give an acceptable degree of protection to the terminal.

A location very far offshore, while practical for a mono-buoy system, would prove quite expensive for a land-fill island-type terminal facility.

Mr. du Pont. I have only one more question, Mr. Cook, and that concerns the Coastal Zone Management Act that was passed by the Congress last year, which I believe the Maritime Administration administers.

Mr. Cook. No, the Department of Commerce.

Mr. du Pont. I am sorry, the Department of Commerce.

Well, do you believe in light of the provisions of this act, and maybe you are not the one to answer this question and you would want to consult with your associates, do you believe under the provisions of this act that any further statute licensing of superports is necessary, because this act does provide for a review of all structures built in the coastal zone, and so forth, and could we not license the superports under this Coastal Zone Management Act?

Mr. Cook. Congressman du Pont, before answering that I would like to consult with counsel for NOAA, who are responsible for administering the act.

Mr. du Pont. I think it would be helpful so not to take the time of the committee if you could provide that information for the record also.

Mr. Cook. I will be happy to do so.

Mr. du Pont. Thank you.

[The information referred to follows:]

The Coastal Zone Management Act ("CZMA", 86 Stat. 1280–1289, 16 U.S.C. 1451–1464) provides coastal states with the authority to determine the type of structure that may be built on their shoreline and in coastal waters extending "seaward to the outer limit of the United States territorial sea". (CZMA, § 304(a)). This outer limit of the territorial sea is generally construed to be a line three geographical miles distant from a state's coastline. Deepwater terminals will be located well beyond the three-mile coastal zone and hence beyond the jurisdiction of the states to license or regulate. Thus, while the Coastal Zone Management Act may provide for review of all structures built in the coastal zone, a superport facility would be outside of that zone and therefore not subject to the CZMA's jurisdiction.

As a practical matter, however, a state will have some control over the construction of offshore terminals beyond the coastal zone through its control over pipelines and shoreside facilities, the necessary complements to a deepwater terminal. While such pipelines could connect the terminal to storage and refinery facilities in a nearby state and thereby avoid a state's authority under its coastal zone management program, such an eventuality appears economically impractical and hence unlikely.

Mr. Downing. Mr. Breaux?

Mr. Breaux. Thank you, Mr. Chairman.

Thank you, Mr. Cook, for your testimony this morning, and I share with Mr. du Pont his hopes that the Department of Commerce report does not recommend the Delaware Bay as a deepwater port.

I would like to see the report recommend Louisiana instead.

One of the reasons or justifications for having a deepwater port under the jurisdiction of the Department of Interior, as I remember the testimony this morning, was that the Department of Interior, under the Outer Continental Shelf Act, regulates the offshore drilling platforms and the lease sales, and therefore this would be an analogous situation. A deepwater port should also fall under their jurisdiction because it is very similar in scope and purpose.

My question concerns the difference between deepwater ports and offshore drilling platforms. On the one hand, we are talking about a platform located perhaps on the Continental Shelf that is there for the purpose of taking something out of the sea bottom, that being oil, whereas, a deepwater port facility is more of a floating dock or floating terminal perhaps, where nothing is being mined or taken out of the sea bed, but is a temporary stopping off point for imported crude oil.

Do you have any problem with the analogy or justification that was presented this morning for deepwater ports being under the jurisdiction of the Department of Interior based on that reasoning?

Mr. Cook. Well, I would not differ with the justification that was presented this morning.

Having said that, I would also say that I would view you as being quite correct in the distinction you have made, and I believe it is a part of the legislative package. Certain amendments are required which have to take into account the fact that Interior will, in this instance, be dealing not with minerals extracted from the surface or subsurface, but with simply the transporting function.

At the same time, Interior in its present role does license and regulate, does have responsibility for the gas and oil gathering lines that are in place in the Gulf Coast, and while the analogy is not precise, I think it is nevertheless an appropriate one.

Mr. Breaux. But you do see the very definite difference between the analogy from overseeing a drilling facility which is actually taking minerals or oils in this case off of the outer Continental Shelf, and one that is just a temporary port which will hold imported crude.

Mr. Cook. Yes, I do.

Mr. Breaux. Maybe Mr. Pollock would be the one to answer this question, but would you envision any expansion of NOAA's duties if they are to be the agency to regulate a deepwater port facility?

Mr. Cook. I would have to defer to Mr. Pollock on that.

Mr. Breaux. I guess perhaps Mr. Pollock is again the one to answer this question, but let me ask it of you, Mr. Cook, if I may.

Concerning the effect a deepwater port would have on marine environment and life surrounding the area where it is located, can we draw an analogy of the effect of offshore drilling platforms on marine life at the present time? From an environmental standpoint do you see the two as having the same effect on marine environment?

Mr. Cook. I can see some similarities. I am afraid that I am really not qualified to answer the question. I think that it would depend upon the type of offshore facility one is considering.

Mr. Breaux. We are talking about one that is going to hold crude oil.

Mr. Cook. Multiple monobuoys with pipelines going into the shore, it would seem to me the environmental concerns would be similar.

Mr. Breaux. Are you in position to state what effect on the environment, on the ecology, and on marine resources that offshore drilling platforms have on the environment?

Mr. Cook. No, sir.

Mr. Breaux. Would that be Mr. Pollock's area?

Mr. Cook. Yes, it would be.

Mr. Breaux. I thank you.

Thank you, Mr. Chairman.

Mr. Downing. Does counsel have a question?

Mr. Heyward. Mr. Cook, in connection with the immediate increase in oil, referring to the study that Mr. du Pont was talking about, it is my understanding that that study for the Maritime Administration, whether it is endorsed or not, is talking in terms of the present need for an additional 2 million barrels per day.

Is that your recollection of what it is saying at this time, and that it will gradually build up over the next 10 or 15 years, and then level off?

I might say those are the figures that I get. I think you were talking in terms of 500 million tons every year which is converted into two million barrels per day.

Mr. Cook. I would want to refresh my recollection on this study.

[The information follows:]

In 1972, the average import rate for crude oil and refined petroleum products was 4.7 million barrels per day. Current figures indicate an average daily rate of 7.1 million barrels, an increase of 2.4 million barrels daily over last year.

The National Petroleum Council projects waterborne imports of crude oil and refined products at 11.6 million barrels per day by 1985; Department of Commerce projections run even higher at 13.7 million barrels per day by 1985.

Whether the need for imported oil will increase beyond 1985 is difficult to predict. Some estimates indicate that our need to import both crude oil and refined products will continue to increase beyond 1985. Other estimates assume that the domestic production of oil and the development of alternate energy sources will increase and that we can expect a leveling-off of imports before 1990. At this time it is difficult to be sure which estimates are the more accurate ones. It is clear in either case that the importation of both crude and refined petroleum will increase dramatically in the next 10 to 15 years.

Mr. Heyward. We have some of the figures from other sources in testimony before the committee that that is about the level that we need to increase our imports within the next year. We need to meet the increasing demand. That report says, as I recall, that the first needed terminal was an east coast terminal, that the second terminal would be on the west coast, and the gulf coast would need an additional reception facility some time around 1980.

That is pretty inconsistent with other testimony we have heard.

First of all, I would suppose that, wherever additional imports are coming, they would be coming toward present refinery capacity, and I think that would probably determine the first input of increase.

Second, since the west coast demand now is pretty close to supply, and there is no additional demand at the present moment, I wonder why they would talk in terms of a Pacific coast need for an offshore terminal. That left me a little confused, frankly.

Are you familiar enough with the study to respond to that question, and if not, would you respond to it in writing?

Mr. Cook. Counsel, I would prefer to respond to it in writing.

[The information referred to follows:]

The position of the Maritime Administration on the need for West Coast superports was most recently noted by Mr. Thomas J. Patterson, the Western Region Director, in a statement to the United States Army Corps of Engineers in San Francisco on June 20, 1973. In that statement Mr. Patterson pointed out that the need for a deepwater port was less acute on the West Coast than on either of the other two United States coastlines, but that such a port would be needed eventually. The majority of West Coast ports—with the notable exceptions of Puget Sound and Long Beach, California—cannot accept nor be made to accept any bulk carrier larger than 80,000 DWT due to channel depths from 30 to 45 feet that cannot feasibly be deepened. Long Beach and Puget Sound, while able now to take VLCC's, should probably be bypassed for such activities because of the danger of collisions and groundings due to channel congestion.

The eventual need for superport facilities on the West Coast can be demonstrated by viewing the forecasts for import needs in the future. The Soros Report indicates that the West Coast imported a total of 68.17 million bbls. of crude and refined oil in 1969. The report projects an increase to 686 million bbls. annually in 1985. A recent Army Corps of Engineers study projects an even higher demand. Crude oil imports to the West Coast in

1980 are projected at 3.2 million bbls. daily. This projected demand constitutes oil import requirements from 10 to 16 times greater than present levels. At some point, deepwater facilities to receive VLCC's must be considered on the West Coast.

Mr. HEYWARD. Now, getting back to Mr. du Pont's question about the Coastal Zone Management Act. If you will look at that you will find that the act is applicable only inside the 3-mile limit, so that it would not directly provide any authority for offshore terminal licensing. But I think that the point that he was aiming at is very, very important, and that is that had the administration provided funding for the Coastal Zone Management Act, many of the States could have moved with even more rapidity than they have moved, come up with coastal zone management programs, and their decision making progress would be far enough along so that it would almost dictate the reasonable locations of any ports offshore.

If I may say so, I think the lack of funding of the Coastal Zone Management Act has delayed State decisions, in many cases as much as a year and a half, on the very problem the administration is now saying very pressingly we must go forward.

I do not know that we are going to change their minds, but they are talking in terms of waiting for an overall land use policy.

Assuming that the Congress moves very rapidly, it is then going to take the States an additional several years to come up with a land use program which that type of legislation will require, instead of using legislation which is already on the books, and which the Department of Commerce has responsibility to implement.

In connection with the shipyard impact of this bill, I think this is a very important aspect.

You mentioned Todd Shipyard and its plans. How long will it take Todd Shipyard, if it carries forward with its plans, to be in a position to construct a 500,000 deadweight ton tanker? Do you have any idea?

Mr. COOK. Counsel, I will have to say that their current design work has been directed toward the smaller tanker.

Mr. HEYWARD. I understand that, that they have not yet converted, so to speak, to the additional capacity, but I wonder if under their present planning you have any idea when they would be ready to actually start work, or to accept a contract to build one.

Mr. COOK. I would have to verify that with the Todd people.

[The following information was submitted in response to the above:]

Todd Shipyard is actively soliciting orders for the 380,000 deadweight ton tankers. They tell us that financing has been arranged to complete necessary expansion plans but is contingent upon receipt of a six-ship minimum order. They are presently ready to accept a contract to build and would commence yard expansion plans immediately upon receipt of contracts for six or more vessels.

Mr. HEYWARD. It seems to me that this opens a very important door to increasing the number of U.S.-flag vessels of the larger size.

As I understand it, we are in a position where our shipyards cannot build much larger tankers than the five or six, I believe, that are not now under contract. Is that not so?

Mr. Cook. Well, I believe that in part it is yes, and if I may elaborate.

I believe Newport News Shipbuilding & Drydock are in the process of going forward with new yard construction there. It is in specific purpose to deal with the LNG orders which they have received, but it is my understanding it will be a yard capable of VLCC construction as well.

Mr. Heyward. Of what size?

Mr. Cook. It is my understanding that it would be 500,000 deadweight tons.

Mr. Heyward. I'm glad you mentioned LNG. I want to go into that area at least briefly.

In considering the construction of these offshore ports, it has all been based on a need for importing oil.

While we are talking about offshore ports, is any serious consideration being given to either cooperative use for other cargoes, or future use of other cargoes, such as LNG, or is it not technically feasible to pipe LNG from offshore?

Mr. Cook. Well, I think that consideration has been given, yes, extensive consideration I believe was given, both within the Maritime Administration and by members of the White House study group, and really all of the agencies with any interest in superports were involved in the White House study group.

We looked at there the need for bulk handling facilities, for coal exports, for ore imports, and costs associated with the facility that could handle other bulk commodities.

The conclusion that was reached was that at the present time, and for the near term future, the important concern is the oil offloading concern.

Now, LNG certainly with the U.S. energy needs is a legitimate area of question, and would have been a concern except that the LNG carriers do not have the draft problem that the oil carriers have.

The LNG density is somewhat less than the density of water, and the vessels ride very high in the water.

Mr. Heyward. I would suggest, however, that aside from the draft need, and aside from the immediate need of oil, it might be wise to look into designs which could incorporate these other needs as they may arise, because I would point out that very little research and very little information is available on the potentive environmental impact of a LNG casualty in a U.S. port.

That very lack of knowledge, it seems to me, suggests that one of the alternatives might be to offload it offshore.

Mr. Downing. If counsel will yield, the problem there, as I understand it, is that LNG has to be kept refrigerated at minus 269 degrees or lower, and then when it discharges, and it gasifies again, the plant that does this operation costs in the neighborhood of $½ billion.

Mr. Heyward. I understand the technical problems, Mr. Chairman, but I thought that LNG could move through pipelines, so I supposed there was some possibility.

Mr. Downing. It moves as gas, but not as a liquid.

Mr. HEYWARD. I have no other question. Mr. Chairman, except for the fact that it is correct, is it not, that tankers larger than say 250,000 deadweight tons would probably be concentrated in the near East trade, rather than being utilized on the West Coast.

From an economic feasibility viewpoint, is it not true that there is no need for 500,000 deadweight tonners coming out of Valdez, Alaska, for instance, if the Alaskan Pipeline was actually constructed, or am I wrong in that assumption?

Mr. COOK. I think I would like to respond to that for the record, but I think that I would like to say on that, that there are a number of items you have to look at in the transportation of oil on a systems basis, looking at pipeline capacity, and tanker storage capacity at both ends of the delivery.

I believe that for the Valdez West Coast run smaller tankers have been contemplated. I think the 225,000 to 265,000 dwt's that are under construction in this country are contemplated for use on the Persian Gulf, U.S. Coast, but in either event they will require offloading facilities if they are to be used for United States and not transshipment.

Their contemplated usage is in the Persian Gulf-United States runs.

Mr. HEYWARD. One final request.

In connection with material that you furnish along with what Mr. du Pont has asked, I would appreciate it if you would include in there something I think the Commerce Department should discuss the potential impact on these offshore terminals on present port areas.

Now, the Commerce Department has responsibilities in port utilization, does it not?

Mr. COOK. Yes.

Mr. HEYWARD. I think a detailed analysis of the potential impact of the offshore terminals on present port facilities might be very helpful if you will address that question.

Mr. COOK. We will be happy to do so.

[The information follows:]

The potential impact of offshore terminals on existing port facilities should be minimal. Presently, most oil shipment offloading takes place directly at the refineries or through submarine pipelines that are adjacent to the refineries. An example of this situation can be seen in the Los Angeles/Long Beach, California area where, of the 15 refineries receiving crude oil, only two do so through separate marine terminals. The regular or "traditional" port areas therefore will not be significantly affected by construction of deepwater ports that will handle bulk loads of crude oil. Moreover, construction of superports may actually have a beneficial effect on the regular port areas since the resultant reduction of water traffic in already overcongested channels should lead to fewer collisions and groundings. Thus, the deepwater port facilities should have slight negative effect on present port facilities and may even result in more efficient ports.

Mr. DU PONT. Mr. Chairman, on the basis of counsel's question, I wonder if I might ask a couple of follow-up questions?

First, in regard to the timing, the Sorros study, page 44, gives a chart as to how long it will take to build one of these superports and starting planning at the beginning of fiscal 1973, that is last July, the answer comes out late fiscal 1978, that is calendar year 1979, before the thing would be completely in operation.

Of course, a year has gone by, so that puts us into 1979.

Now, it is my understanding that one of the purposes of any offshore oil facility is to take up the swing years between now and 10 years from now, when hopefully we will have developed some of our other energy resources in order to meet our energy needs.

If it is going to take that long, it seems to me that 7 of our 10 years when the problem is critical are going to be used in constructing something that we would like to have right away.

Would it not be more feasible to build a monobuoy which can be done rather quickly?

Mr. Cook. Yes; I think your point is a very good one.

Mr. du Pont. Second, there is an estimate, two pages long, page 46 of the report, indicating that to put through 2 million barrels a day through a superport, the cost is going to be about $500 million. That is a little higher than some of the other estimates that we have had, but does the Commerce Department have any estimate of the shoreside impact? In other words, if it is going to take $500 million to build a superport offshore, how many millions of dollars worth of refinery and petrochemical equipment are going to have to be built on the other end, onshore, to handle it?

That is not included in the report, and I wonder if you have any data on that.

Mr. Cook. Well, it seems to me, Congressman, that this is a matter where one has to look at a specific site location to make the evaluation.

First, with respect to the cost of the superport, or deepdraft offloading facility, one can be talking about a single monobuoy, and the pipeline, or several monobuoys and a pipeline, or pipelines in an associated way, and the cost there is very, very considerably less than $500 million.

Certainly, depending upon the mileage you could have a monobuoy and line in place for less than $1 million. One then has to look at the shoreside situation if there are refineries and petrochemical plants and storage facilities already in place, then the shoreside investment would not be very large.

Presumably, some shoreside investment will be required in almost every case because of the large capacity that you are putting through in the short time range. So you will have to have some additional storage facilities in most cases.

Mr. du Pont. Well, I was simply using your $500 million figure for the program you outlined in here, and surely a monobuoy could be done for a lot less.

I would be interested for the record to know if the Commerce Department has any estimates for the shoreside costs in connection with this particular recommendation, particularly what kind of facilities they foresee.

Mr. Cook. Well, I would be happy to see if we do have such estimates.

[The information follows:]

It is difficult to estimate shoreside development costs without reference to a particular site and project design.

Assume that a mono-buoy facility is installed within 25 miles of the coastline, and oil is pumped ashore via pipelines. The cost for such offshore deepwater installation, including associated pumping facilities, connecting pipelines, shoreside storage tanks, surge facilities, and necessary connections to a master pipeline distribution system, would be approximately $400,000,000.

It can be anticipated that established refineries which are or can be serviced by a master crude pipeline would expand in order to keep up with the continued rising demand for refined petroleum products. By the same token, the existing petrochemical complexes will also expand. To estimate the total dollar value of such expansion in petroleum product refineries and petrochemical plants at this time would be highly speculative due to the current complexity of the whole energy question. Estimates have been made, based upon economic impact studies done in Texas and Louisiana in support of deepwater port facilities, that the cost of new refining and petrochemical facilities could exceed $5.4 billion by the year 2000. However, since a host of factors are involved, such projections must be considered rough estimates.

Mr. Cook. I think I should perhaps, and perhaps I have not emphasized to that degree in my earlier responses, that the Commerce Department certainly does not endorse the Sorros concept of a superport as a means of dealing with the problem we face today.

It certainly appears that the decisions which are being made in the private sector, in cooperation with the State authorities, for example, in the State of Louisiana, and the State of Texas, where the emphasis is on monobuoys and offloading facilities for deep draft tankers, it certainly appears to us that is is quite a sensible and proper, and very, very commendable way to deal with what appears to be the problem.

Mr. du Pont. Well, Mr. Cook, I thank you very much for your answers, and I am truly sorry that Mr. Blackwell was not here today, and I expect you are too, to take on some of these questions. And, Mr. Chairman, I would like to suggest, if it is not out of order, that in light of all the interest in this, that perhaps we could ask Mr. Blackwell to come down at his convenience, and see if he can fill us in on some of these answers.

Mr. Downing. Mr. Cook, counsel will submit questions to you and I would like you to return the answers at your earliest convenience.

Mr. Cook. We will be happy to, Mr. Chairman.

[The questions and answers follow:]

Question (1).—Assuming enactment of H.R. 7501 or similar legislation, provide a five-year cost estimate in terms of monies and personnel for MARAD to administer its responsibilities under such legislation. Also provide information as to the specific role and responsibilities which MARAD will have under H.R. 7501 or similar legislation and how MARAD will implement and fulfill these functions.

Answer (1).—The Maritime Administration views its responsibilities under pending superport legislation as falling into 3 general areas: assisting the Department of Interior in licensing superport appilcants; developing an interface between such facilities and the merchant shipping industry; and providing technical assistance to government and industry by continued research and development.

The Maritime Administration has developed a Deepwater Ports Facilities Program in response to the need for such offshore facilities. The program has three distinct project areas, described below, related to MarAd's three areas of functional responsibility:

Project I. *Support of the Department of Interior in Licensing Deepwater Ports.*

A. Establish working liaison with all interested Federal agencies.

B. Draft terminal criteria for deepwater port licensing.

C. Draft procedural framework which would govern the issuance, modification and revocation of license.

D. Draft criteria for the regulation of deepwater port construction and operation.

E. Submit for comment the drafts of deepwater port licensing and regulatory criteria to other concerned Federal agencies.

F. Publish proposed licensing and regulatory requirements in Federal Register for comment.

G. Prepare final licensing and regulatory requirements for deepwater ports.

Project II. *Deepwater Ports Operation Interface With Maritime Shipping.*

A. Develop an economic analysis of the impact and interface of deepwater terminals on U.S. shipping policies and plans.

B. Determine the impact of deepwater ports on conventional ports and establish the requirements for feeder systems.

C. Study terminal designs and suggest improvements.

D. Analyze deepwater operations in relation to intermodal and international shipping programs.

E. Establish plans for Federal control of deepwater port facilities under national emergency conditions.

F. Maintain industrial liaison and foster cooperative development of offshore terminals.

Project III. *Technical Assistance, Research and Development.*

A. Develop a technical analysis of port operations, anti-theft and weather protection techniques, and equipment development and demonstration programs.

B. Conduct research and development on advanced shipping, port operations and design.

C. Analyze commercial shipping operations.

D. Assist the proper development of port retention facilities and environmental protection safeguards.

E. Provide technical training facilities.

The Maritime Administration has also been asked to present a 5-year funding plan for these projects. The following tables are based upon the assumption that the Department of Interior will ultimately be the governmental agency with responsibility for licensing the deepwater port facilities. Any substantial change in the legislation, such as removing the primary licensing authority from the Department of Interior, would necessitate a recalculation of project responsibilities and funding requirements.

		Time frame
Project I	Support of Department of Interior in Licensing Deepwater Ports.	1st–2 years (fiscal years 1974 and 1975).
Project II	Deepwater Port Operation Interface With Merchant Shipping.	The next[1] 3 years (fiscal years 1976, 1977, 1978).
Project III	Technical Assistance and Research and Development.	Also on-going during the next 3 years[1] (fiscal years 1976, 1977, 1978).

[1] Projects II and III are listed in our analysis as ending in fiscal year 1978. However, this is only for purposes of providing funding data for a 5 year plan. Actually, the Maritime Administration's responsibility in Project II and III wil continue beyond 1978.

MARAD'S DEEPWATER PORTS FACILITIES PROGRAM—STAFF COSTS

		Estimated annual funding plan—		
	Estimated annual salary	Project I	Project II	Project III
GS 17	36.0	(1) 36.0		
GS 16	31.2	(1) 31.2		
GS 15	26.9	(3) 80.7	(1) 26.9	(1) 26.9
GS 14	23.1	(2) 46.2	(1) 23.1	(1) 23.1
GS 13	19.7	(2) 39.4	(1) 19.7	(1) 19.7
GS 9	11.6	(1) 11.6		
GS 7	9.5	(1) 9.5	(1) 9.5	(1) 9.5
GS 5	7.7	(3) 23.1	(2) 15.4	(1) 15.4
		14 277.7	6 94.6	6 94.6

Estimated Employment Benefits (8.22 percent):

Project I—(14 people involved for 2 years—fiscal year 1974 and 1975) \$277.7×1.0822=\$300.5 [fiscal year 1974 will be partially staffed].

Project II—(7 people involved for 3 years—fiscal year 1976, 1977, 1978) \$94.6×1.0822=\$102.4.

Project III—(7 people involved for 3 years—fiscal year 1976, 1977, 1978) \$94.6×1.0822—\$102.4.

Note.—The above annual estimates were rounded off as \$300,000 and \$100,000 for purposes of preparing the estimated total 5 year funding plan.

MARAD'S DEEPWATER PORTS FACILITIES PROGRAM—5 YEAR FUNDING PLAN
[Stated in thousands of dollars]

	1974	1975	1976	1977	1978	5 year total
Project I: Support of Department of Interior in Licensing Deepwater Ports:						
Staff cost	$200	$300				$500
Contracting cost		100				100
Project II: Deepwater Ports Operation Interface With Merchant Shipping:						
Staff cost			$100	$100	$100	$300
Contracting cost		300	1,200	1,200	1,200	3,900
Project III: Technical Assistance and Research Development:						
Staff cost			100	100	100	300
Contracting cost	600	800	1,500	1,500	1,500	5,900
Total	800	1,500	2,900	2,900	2,900	11,000

Question (2).—Provide a detailed listing and analysis of all the laws and programs administered by MARAD which would be affected by or upon which there would be an impact by the enactment of H.R. 7501 or similar legislation. Indicate which, if any laws, should be specifically amended, repealed, modified, or expanded in the provisions of such legislation.

Answer (2).—Virtually all the maritime aid programs administered by the Maritime Administration would be affected by the enactment of a superport licensing bill. Very large Crude Carriers (VLCC's) would continue to be constructed under the Maritime Administration's tanker program to take advantage of the available offshore deepwater terminal facilities. Construction-differential subsidy under title V of the Merchant Marine Act, 1936, as amended (the "Act", 46 U.S.C. §§ 1151–1161) would be awarded for such VLCC's to be used in connection with the developing superports. Operating-differential subsidy under title VI of the Act (46 U.S.C. §§ 1171–1183) and ship financing guarantees under title XI of the Act (46 U.S.C. §§ 1271–1280) would be granted on VLCC's carrying products to such terminals, if necessary. Earnings of such supertankers calling upon deepwater terminals could be deposited into capital construction funds on a tax-deferred basis pursuant to section 607 of the Act (46 U.S.C. § 1177).

The responsibilities of the Maritime Administration in the area of port construction, development and operation, under Section 8 of the Merchant Marine Act, 1920, as amended (46 U.S.C. § 867) and Section 205 of the Merchant Marine Act, 1936, as amended (46 U.S.C. § 1115) would focus on the development and utilization of such facilities. The Maritime Administration's responsibilities over ocean ports and shipping in the event of national emergencies (Executive Order 11490, issued October 28, 1969) would extend to offshore terminals.

It is anticipated, moreover, that the Maritime Administration's expertise in areas of ship construction and design, port construction and operation, deepwater offloading problems, and related problems would be sought by the Department of the Interior in its administration of any superport licensing authority.

It does not appear that any existing laws under which the Maritime Administration is authorized to act will require modification.

Question (3).—In the context of the definition of offshore terminals in H.R. 7501, would MARAD oppose or favor limiting such deepwater port facilities to the importation of oil products as opposed to all commodities. Provide appropriate reasoning behind your answer.

Answer (3).—At present deepwater port facilities are not necessary for handling the importation of commodities other than crude oil since no other commodity is being imported in such large volume as to require the use of deep draft vessels. Offshore terminals may provide the basis for expansion to such uses in the future when bulk carriers of VLCC size are engaged in carrying other commodities, but the use of such carriers is not dictated by current volume requirements and transport distances. Non-liquid bulk commodities will probably require transshipment to shore on smaller vessels, although progress is being made with slurry transfers of bulk cargoes.

Question (4).—In the context of H.R. 7501 or similar legislation, would MARAD oppose or support language which would prohibit the importation of oil or oil products into a U.S. deepwater port by foreign-flag vessels? Provide appropriate reasoning for your answer.

Answer (4).—The Maritime Administration would oppose language that would prohibit the use of U.S. deepwater ports by foreign-flag vessels. The U.S. does not have, and will not have in the foreseeable future, sufficient tonnage to meet our oil import requirements, so that it is clear that the greater part of our required oil imports will necessarily be carried on vessels of foreign-flag registry.

Question (5).—From the standpoint of bunkering and repair facilities for VLCC's using U.S. deepwater port terminals, provide a listing of those existing ports or terminals which could provide this service for these large draft vessels. Assuming the scarcity of such inshore locations in relation to the possible site location of deepwater ports, how will tanker servicing and repair be accomplished and what will MarAd's role and plans be in this regard? What provision should be included in the legislation on this problem?

Answer (5).—Insofar as bunkering facilities for VLCC's using U.S. deepwater port facilities is concerned, there is no particular problem. Bunkers can be supplied via pipeline or barge concurrent with discharging operations. If the VLCC discharge port facility is not equipped to supply bunkers via pipeline and if there are operational considerations which would preclude the use of bunkering barges, bunkers could be obtained at almost any port enroute to the next loading port. After the VLCC has completed discharge, the ship's draft would be such as to allow the ship, if required, to enter most of the major U.S. ports for the purpose of bunkering.

The repair facilities available for VLCC's using U.S. deepwater ports is an entirely different matter. Routine voyage repairs can be accomplished concurrent with cargo operations. Major repairs or classification surveys do present a problem, since at the present time the large drydocking facilities that are essential for a major service of VLCC's are very limited. In the United States, there are presently one 1200' x 200' x 38' graving dock (normally used for ship construction) at Baltimore, Maryland: two 1093' x 150' x 41' graving docks (currently being used for ship construction) at Brooklyn, New York; one 900' x 150' x 35' floating drydock at San Francisco, California: and two graving docks under the control of the U.S. Navy, one 1183' x 172' x 47' dock at Bremerton, Washington and one 1092' x 151' x 47' dock at Bayonne, New Jersey. Depending upon dimension requirements, additional sites could accommodate large vessels for repair.

Adequate repair facilities for VLCC's in the United States have not come into being since VLCC's do not yet regularly trade at American ports. Consequently, there has not been sufficient incentive for the ship repair industry to make this type of business attractive to the American ship repairers.

The Maritime Administration's responsibilities concerning adequate shipyard facilities for VLCC's go toward fostering and promoting entrepreneurs engaged, or potentially engaged, in this field, as such facilities must ultimately be constructed by the private sector. If a floating drydock for VLCC's were to be constructed, the Maritime Administration could assist by guaranteeing necessary financing under tilte XI of the Merchant Marine Act, 1936, as amended.

It does not seem that a sufficiently serious problem exists at this time to require special legislation as part of the current legislative package. In due course, Congress may wish to consider whether certain maritime aids now available only to ship operators should be made available for the construction of supertanker repair and maintenance facilities. Congress may also wish to consider whether foreign repairs should be exempted from duty when they are necessitated by unavailability of repair facilities of sufficient capacity to service vessels of VLCC size in the United States.

Question (6).—From the standpoint of MarAd's responsibilities under H.R. 7501 or similar legislation, what specific criteria would MarAd require in the body of the applicant's permit application? What specific criteria should be contained in the legislation in this regard?

Answer (6).—Pending legislation should prescribe, and regulations issued pursuant thereto then require, the following in an applicant's permit application:

1. Establishment of financial responsibility;
2. Demonstrated ability to construct and operate a deepwater port facility in compliance with environmental and safety standards, including but not limited to pollution and fire control systems, terminal operation control procedures, pilotage and docking details;
3. A satisfactory plan for continuity of operation during periods of national emergency or natural disasters;
4. Transfer provisions, so that in the event the original applicant sells or otherwise conveys his interest, the subsequent license holder must show, prior to approval of the transfer, his ability and eligibility to operate on the same basis as the original licensee; and
5. A showing of United States citizenship by the applicant, whether a natural person or corporation, and by any related company or affiliate exercising or able to exercise control over such company.

Mr. Downing. I see that Mr. Pollock has returned. I certainly thank you, Mr. Pollock.

Mr. Breaux, do you have a question that you would like to have answered?

Mr. Pollock. I finally got excused over on the Senate side to return here.

Mr. Breaux. I am glad to see that Mr. Pollock has returned to the brighter side of the Capitol.

Mr. Pollock, I have one question, and Mr. Cook said to refer it to you as the better source of information.

Since NOAA would have responsibility for determining what effect an offshore deepwater facility would have on the marine environment and marine life in general, I was wondering whether we can draw any analogy to a situation of our drilling platforms that are already in existence off the coast of Louisiana, and generally in the Gulf of Mexico, to a deepwater port terminal that we are talking about here as far as it affects marine environment and marine life in general.

Mr. Pollock. Yes, sir, I would be happy to respond.

I think part of the answer again would depend upon the kind of deepwater port facility we were constructing. Obviously, if it were necessary to do any dredging, it would have one effect on marine life. If it were simply tethered to the bottom with one or more connections, or if there were legs going down that were simply put in place on the surface, this would have a different kind of effect.

I think that experience has demonstrated the drilling platforms attract an enormous amount of fish. The platforms provide an unusual sanctuary for marine life. I found this out both specifically, and from my own personal observation.

I know that if fishermen want to find fish in the area off Louisiana, they go to the areas where the oil drilling platforms are located, because that is where the fish have collected.

I think this would happen with the deepwater port.

Mr. Breaux. I would think that basically the situation is very similar, if we are talking about a deepwater facility that is fixed to the ocean floor, which basically acts as a pumping station after it receives the crude oil, and to pump that crude to the shore by means of a buried line, buried two or three or more feet under the surface of the ocean floor.

Mr. Pollock. I think that is correct.

Mr. Breaux. Let me ask you one final question.

Would you envision any expansion of the NOAA organization if it was to be the supervisor of the offshore deepwater facility, or are you equipped at the present time to take on this added responsibility?

Mr. Pollock. Well, Mr. Breaux, I think first I should say that NOAA is not a regulatory agency, and therefore, I would not contemplate that there would be a necessity for increase, but it would depend upon the kind of authority that would be given to the organization.

If our responsibility is one primarily of monitoring and assessing the detriment or the benefit to the environment, that is one thing. If we were given regulatory authority over shipping or over the handling or processing of the oil, that would be quite another thing.

Mr. Breaux. I appreciate that. Thank you.

Mr. Downing. Mr. du Pont?

Mr. du Pont. I have no questions.

Mr. Downing. The committee wishes to thank both of you gentlemen for your patience, and for your contribution.

The committee stands adjourned, subject to the call of the Chair.

(The following questions were submitted to Mr. Pollock with answers supplied thereafter:)

Question No. 1. Kindly respond to Congressman Snyder's Question pertaining to the Coastal Zone Management Act of 1972 and its relationship to deepwater port legislation on page 249 of the transcript.

Mr. Snyder's question was as follows: "My question is basically, I understand your shop has jurisdiction over the Coastal Zone Management Act of 1972. Assuming it might be funded, I would like for you to give us an answer as to what safeguards for States are built into the regulations which, I understand, you introduced in the last day or two, assuming they do not have this veto power that has been discussed on the testimony."

Answer. A number of the coastal states are moving ahead under their own stimulus to develop coastal zone management programs in advance of Federal funding. There are important relationships between state and coastal zone management programs and implementation of the proposed deep water port legislation. These relationships stem from the fact that deep water ports can have significant secondary impact on the regions in which they are located. The refineries and petro-chemical complexes usually associated with superports will require substantial quantities of land in the coastal zone. Such facilities require substantial water supplies. The population increases attracted to these complexes will exercise the demand for public services such as roads, schools, and sewage facilities. The best means of preparing for these impacts will be through effective state planning. With effective state planning, these secondary effects of offshore port development can be provided for in an orderly fashion. Conversely, state plans and programs which do not provide for proposed offshore port development could pose major impediments to the construction of such facilities.

The Administration's deep water port facilities bill recognizes and makes provision for these relationships:

(1) Section 103 (e) of the proposed legislation provides that the Secretary of the Interior "shall consult with the Governor of any State off whose coasts the facility is proposed to be located to determine whether the operation of the facility and directly related land based activities would be contrary to the state land us planning program."

(2) Section 111 (a) of the Administration's bill provides that the laws of the United States shall apply to deepwater port facilities licensed under the Act "in the same manner as if the facilities were located in the navigable waters of the United States." That Section further provides "to the extent they are applicable and not inconsistent with the Act, or with other Federal laws and regulations now in effect or hereafter adopted, the civil and criminal laws of the nearest State are declared to be the law of the United States for such facility." This

means that the provisions of the Coastal Zone Act governing Federal actions, such as section 307(c)(1) which requires that Feedral agencies conducting or supporting activities directly affecting the coastal zone shall conduct them in a manner which is to the maximum extent practicable, consistent with approved State management programs, are applicable to deepwater ports licensed by the Federal Government. It does not mean that State jurisdiction is extended beyond the three mile limit to deepwater port facilities. Section 111(a) was not intended to extend State jurisdiction.

(3) Section 12 provides "facilities connected to a deep water port facility licensed under this Act such as pipelines and cables, which extend above and into submerged lands or waters subject to the jurisdiction of any State or possession of the United States, shall be subject to all applicable laws or regulations of such State or possession to the extent not inconsistent with Federal law or regulations."

The Coastal Zone Management Act of 1972 contains important provisions relating to this issue:

(1) Section 306 (c) 8 provides that in approving a state coastal zone management program, the Secretary of Commerce must determine that "the management program provides for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature."

(2) Section 307 contains provisions calling for coordination between the State government and the Federal government when the State is developing and submitting for Federal approval a coastal zone management program. These include provisions for mediation by the Secretary of Commerce in cooperation with the Executive Office of the President of serious disagreements between Federal agencies and the states in developing a program.

(3) Section 307 also provides that once state management programs have been received for Federal approval, Federal agencies conducting or supporting activities directly affecting the State's coastal zone are required to conduct or support those activities in a manner which is to the maximum extent practicable consistent with the approved state program. Further, after final approval of a state's coastal zone management program any applicant for a required Federal license or permit to conduct an activity affecting land or water uses in the coastal zone of that state must certify that the activity complies with the state plan. The state concerned is afforded full opportunity for review of such certifications. State concurrence in the proposed activity is required unless the Secretary finds that the activity is consistent with the objectives of the Coastal Zone Management Act or otherwise necessary in the interest of national security.

Thus, we believe that the provisions of the proposed deep water facilities bill and those of the Coastal Zone Management Act of 1972 reflect the same intent. That is, deep water port facilities and their attendant onshore development should be consistent with state planning and programs. Conversely, State plans to receive Federal approval should make provision for facilities which are required in the broader national interest. We believe that these objectives can be met through careful planning and program coordination.

Question No. 2. Provide for the record a five-year cost estimate in terms of monies and personnel which would be required for NOAA to fulfill its responsibilities under H.R. 7501 or similar legislation. Also provide a more complete analysis of the role which NOTT would play under such legislation.

Answer. As indicated in my testimony, we believe our base NOAA programs will provide the information needed for NOAA to fulfill its responsibilities. However, there may be specific studies and information requirements over and above those provided in ongoing NOA programs. In that event we would evaluate and request additional funding. It is difficult to imagine that our requirements would exceed $500,000 and 5 man-years/per year under H.R. 7501 as currently drafted.

NOAA programs cover a wide spectrum of activity to understand the ocean. One major role is the preparation of nautical charts which are the basic tools required for safe and efficient conduct of waterborne commerce. This activity is supported by hydrographic surveys and field investigations to determine bottom configuration, to locate both physical obstructions and aids to navigation, and to produce a graphic description of navigable water areas. Another program deals with determining the structure and motion of the ocean. This involves investigating the structure, velocity, and extent of ocean currents to improve the capability in predicting movement of water, heat, and pollutants.

It also involves an investigation of the origin, structure, and changes of the continental shelf and the sediments which carpet it. Equally as important are programs to determine and assess the abundance and distribution of the living and non-living resources. Overlaying these programs is the basic environmental service of timely observations and measurement of the existing state of the weather essential for providing warnings and forecasts to the public and specialized users. These more basic thrusts of NOAA are supported by an array of programs dealing with instrumentation, better methods and procedures, and services to user groups.

More specifically:

The Environmental Data Service possesses the world's most comprehensive collection of marine environmental data. The information includes atmospheric, oceanographic, and terrestrial data.

The Office of Sea Grant provides support to educational institutions in a wide variety of fields: resource development, coastal zone ecology, management modeling, economics, resource utilization, legal aspects, and pollution monitoring and abatement.

The Office of Coastal Environment serves as a focal point for coordination with and advise to governmental, public, industrial, academic, and other institutions concerned with coastal zone management. In addition to implementing the Coastal Zone Management Act of 1972, this office coordinates NOAA's role in the administration of the Marine Protection, Research and Sanctuaries Act of 1972, conducts a Marine Ecosystems Analysis Program designed to provide information on the impact of man on coastal environments, and conducts the civilian Manned Undersea Science and Technology program.

The National Marine Fisheries Service carries out programs to: (1) understand the life requirements of marine sport and commercial fishes and marine mammals, and monitor the abundance and distribution of these living marine resources; (2) manage fishery resources to achieve the appropriate allocation of these resources and their environment among competing users; and (3) bring to bear consolidated expertise on problems, proposals, and programs in the broad area of environmental protection, i.e., proposals for water development projects of all kinds to ascertain their potential impact on the marine, estuarine, and anadromous environment and fishery resources. This latter role includes activities under the Environmental Policy Act, the Fish and Wildlife Coordination Act, the Refuse Act, River Basin Comprehensive Studies, etc.

The National Ocean Survey develops maps, conducts surveys, carries out investigations, conducts analyses and research, carries out a program of technology development, and provides charts for the safety of marine and air navigation. It disseminates data in the following fields: geodesy, gravity, astronomy, aeronautical charting, hydrograph, oceanography, and marine technology.

The National Weather Service makes observations and measurements of atmospheric phenomena as required for meteorological services, develops and distributes forecasts of weather conditions and warnings of severe storms and other adverse weather conditions for protection of life and property. This includes observation of ocean conditions such as forecasts and warnings of waves, tsunamis, and sea ice.

Question No. 3. Provide a listing and analysis of all laws and programs of NOAA which will be affected or upon which there will be impact—assuming enactment of H.R. 7501 or similar legislation. Your analysis should further indicate the reasons therefor in addition to commenting on whether or not any of these laws will or should be repealed, amended, or specifically mentioned in the context of H.R. 7501 or similar legislation.

Answer. As I mentioned in my testimony we have general authority to conduct oceanographic, meteorological and marine biological surveys and investigations of marine areas effects by deepwater ports. As I noted, those most directly related are the Coastal Zone Management Act of 1972, the Marine Protection, Research and Sanctuaries Act of 1972, and the Fish and Wildlife Coordination Act. Summaries of the latter two follow. Pertinent sections of the Coastal Zone Management Act are discussed under Question No. 1.

None of these laws should be or will be amended or repealed.

DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES SERVICE

FISH AND WILDLIFE COORDINATION ACT, AS AMENDED—16 U.S.C. 661–666C

Authorizes the Secretary of the Interior to cooperate with Federal, State, and public or private agencies in the conservation and development of fish and wildlife resources affected by water-resource development programs. He is further authorized to make reports and recommendations on wildlife aspects of such projects based on surveys and investigations to be conducted by the Fish and Wildlife Service. These reports and recommendations are made an integral part of the report prepared by any Federal agency, responsible for engineering surveys and construction of such projects, to be presented to Congress or authorizing agency.[1]

48 Stat. 401—Public Law 121, 73rd Cong.—Act of March 10, 1934.
60 Stat. 1080—Public Law 732, 79th Cong.—Act of August 14, 1946.
62 Stat. 497—Public Law 697, 80th Cong.—Act of June 19, 1948.
72 Stat. 563—Public Law 85-624—Act of August 12, 1958.
79 Stat. 216—Public Law 89-72 (sec. 6(b))—Act of July 10, 1965.

MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972 OCEAN DUMPING: 33 U.S.C. 1401-1444

Title I of the Act establishes a system to regulate the transportation of material from the United States for dumping into ocean waters, and the dumping of material, transported from outside the United States, if the dumping occurs in ocean waters over which the United States has jurisdiction or over which it may exercise control, under accepted principles of international law, in order to protect its territory or territorial sea. This Title is administered by the Administrator of the Environmental Protection Agency, the Secretary of the Army, and the Secretary of the Department in which the Coast Guard is operating.

Title II of the Act directs the Secretary of Commerce, in coordination with the Administrator of the Environmental Protection Agency and the Secretary of the Department in which the Coast Guard is operating, to initiate a comprehensive and continuing program of monitoring and research regarding the effects of the dumping of material into ocean waters or other coastal waters where the tide ebbs and flows or into the Great Lakes or their connecting waters. The Secretary of Commerce, in consultation with other appropriate Federal entities, is directed to initiate a comprehensive and continuing program of research with respect to possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems.

In carrying out his responsibilities, the Secretary is authorized to utilize the resources of other Federal entities, including the Coast Guard for monitoring purposes. He is to cooperate with and render financial and other assistance to public authorities at all levels, private institutions, and individuals to promote coordination of research, investigations, and studies to determine the means of minimizing or ending all dumping of materials by October 23, 1977. There is authorized to be appropriated not more than $6.0 million each year for fiscal years 1974, 1975, and 1976.

86 Stat. 1052—Public Law 92-532 (Titles I & II)—Act of Oct. 23, 1972.

MARINE SANCTUARIES: 16 U.S.C. 1431-1434

Title III of the Act authorizes the Secretary of Commerce to designate as marine sanctuaries areas of ocean waters as far seaward as the outer edge of the Continental Shelf, coastal waters where the tide ebbs and flows, or waters of the Great Lakes and their connecting waters, for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or esthetic values. Before such designation, the Secretary is required to consult with the Secretaries of State, Defense, Interior, and Transportation, and the Administrator of the Environmental Protection Agency. The Secretary must obtain the approval of the President. If the designation is to include waters within the territorial limits of any State or waters over the subsoil and seabed within the seaward boundary of a Coastal State as defined in the Submerged Lands Act (43 U.S.C. 1301(b)), the Secretary must first consult with, and give due consideration to the views of, State officials involved. The Governor of any State thus involved has a veto power over all or any part of the designation. A public hearing is required to be held in the coastal area affected prior to the designation.

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[1] In the original 1934 Act the Secretaries of Agriculture and Commerce were given the responsibility for the activities authorized in the Act. Subsequent amendments followed the transfer to Interior of responsibilities for fish from Commerce and wildlife from Agriculture so the statutes named the Secretary of the Interior. The 1970 Edition of the U.S.C. cites 1939 Reorganization Plan No. II and 1940 Reorganization Plan No. III but fails to cite Reorganization Plan No. 4 of 1970.

The Secretary, in consultation with other interested Federal agencies, shall issue regulations to control any activities permitted within the designated sanctuary. Civil penalties for violation of the regulations are provided. There is authorized to be appropriated not more than $10,000,000 annually for fiscal years 1973, 1974, and 1975 to carry out the provisions of the Title, including acquisition, development, and operation of the marine sanctuaries designated under the Title.

86 Stat. 1061—Public Law 92-532 (Title III)—Act of Oct. 23, 1972.

Question No. 4. From the standpoint of NOAA's functions and responsibilities, what specific statutory criteria should be in deepwater port legislation to insure adequate protection of the marine and coastal zone environment? What specific conditions or requirements should be included within any license or permit which may be granted?

Answer. Section 103(b)(3) elaborates those factors that must be considered to licensing a deepwater port. We believe the bill H.R. 7501 provides language that recognizes and provides for safeguarding these significant environmental factors and values. Each license or permit should be considered separately with specific conditions being required following a thorough analysis and evaluation of the desired multiple uses of the area under consideration.

Question No. 5. What specific categories and types of information would NOAA require the applicant to submit in his permit application so that NOAA can conduct an appropriate analysis of the merits of the application from the standpoint of marine and coastal zone environmental protection?

Answer. The applicant should provide:

(1) A description of the structure including location, design, method of installation, linkage to shore facilities, and shore facilities.

(2) Description of design safeguards to minimize spills ,e.g., multiple valves in linkage to shore, navigation aids, facilities, etc.

(3) Construction schedule.

(4) Volumes and physical and chemical characteristics of material to be handled.

(5) Weather, hydographic, biological and geologic descriptions of the proposed site, and analysis of these data as they apply to design and operation of the facility.

(6) Description of quality control programs to insure minimum risk of spill.

(7) Projected secondary development that will be generated by the facility.

[Whereupon, at 2:50 p.m., the committee adjourned, subject to the call of the chair.]

OFFSHORE PORTS AND TERMINALS

MONDAY, JUNE 25, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:50 a.m., in room 1334, Longworth House Office Building, Hon. Leonor K. Sullivan (chairman of the committee) presiding.

The Chairman. The committee will come to order.

This morning, the Committee on Merchant Marine and Fisheries is continuing a set of comprehensive hearings addressing the need for, and the various problems connected with, the construction and operation of deepwater offshore ports and terminals for the reception of our increasing oil imports.

These hearings will be going on the rest of this week, we have them scheduled for July, and we are going to continue until we hear all those that we think are necessary to be heard from the viewpoint of what our needs may be, how we will transport any of the imports of oil or natural gas. We are just not certain how long the hearings will go on.

Our first witness this morning is Brigadier General James L. Kelly, Deputy Director for Civil Works, U.S. Army Corps of Engineers.

Is Mr. French along with you, General Kelly?

General Kelly. No, ma'am, he is not present today.

The Chairman. I thought he was to be here with you. I was going to bring him up at the same time.

Do you have a prepared statement?

I am sorry, I did not get to see it over the weekend. I was going to ask you if you could summarize it, but I think you can read it within 15 minutes.

So, will you proceed, General?

STATEMENT OF BRIG. GEN. JAMES L. KELLY, DEPUTY DIRECTOR FOR CIVIL WORKS, U.S. ARMY CORPS OF ENGINEERS

General Kelly. Madam Chairman and members of the committee, I am Brigadier General James L. Kelly, Deputy Director of Civil Works, Office, Chief of Engineers, Department of the Army.

I appreciate having the opportunity to testify on H.R. 5091 and H.R. 5898.

The first bill pertains to regulation of various types of possible physical developments in the marine environment, including ports, terminals, powerplants, airports, and research platforms.

The second bill pertains only to regulation of offshore port and terminal facilities.

Both H.R. 5091 and H.R. 5898 would assign the principal licensing or permitting authority for deep-port development to the Secretary of Commerce.

The proposals both conflict directly with the administration's legislation—introduced as H.R. 7501—which assigns such responsibility to the Department of the Interior.

The Department of Navy, on behalf of the Department of Defense, has already furnished the committee comments on both bills. Those official comments are attached at the close of my formal statement.

My testimony will concentrate on matters the committee has expressed interest in, not covered in previous comments particularly the general findings to date of the Corps of Engineers' studies of potential requirements for new or modified navigation-transportation facilities to accommodate deep draft cargo carriers.

By congressional direction, we have been engaged in such studies for three coastal regions of the Continental United States—the North Atlantic, the Gulf, and the Pacific.

In the interest of time, I will skip to the bottom of page 2 because it has been previously covered.

The CHAIRMAN. It will be made part of the record, however as though you read it.

General KELLY. Thank you.

Deepwater port facilities are of current concern because the world market for seaborne movement of bulk commodities, especially petroleum, is very large and growing rapidly.

The 1971 shipments of six principal bulk commodities—oil, iron ore, coal, grains, phosphate rock, and bauxite—amounted to 1.7 billion.

The most dramatic aspect of U.S. bulk commodity trading stems from the rapid growth in the demand of our industrialized Nation for crude petroleum. The President, in his recent energy message, has emphasized the need for greater oil imports at least in the short range, over at least the next 5 to 15 years. We face the almost certain need for annual imports of up to 300 million tons of crude oil by 1980.

The world petroleum and maritime industries, led by Japan and Europe, have responded to the growth in trade—particularly in movement of crude oil over long distances—by the development of supersize ships with capacities ranging between 200,000 to 350,000 deadweight tons (dwt), and even larger ships up to 500,000 dwt now being built.

Currently, the maximum capability for most U.S. crude oil ports is 65,000 to 80,000 dwt carriers.

Ships for moving iron ore, coal, and other bulk commodities, separately or in multipurposes vessels (OBO's)—are also becoming larger, but not to the same extent as tankers.

In December 1970, Congress authorized the first study of regional navigation requirements, with particular reference to economies afforded by the use of supersized bulk transport vessels and tankers.

The first regional study authorization pertained to the Texas gulf coast. Subsequent study resolutions expanded the study assignment to cover the gulf coast from Brownsville, Tex., to Tampa, Fla., and also authorized regional assessment of navigational facility requirements for the North Atlantic and Pacific Coasts.

Despite differing times for study authorizations and appropriation of study funds, the Corps scheduled the three regional studies in concert, with first field-level reports for each region to be completed by about July 1 of this year.

The reports must then be processed through the office, Chief of Engineers, the Office of the Under Secretary of Army, and the Office of Management and Budget, and we would hope that they could be submitted for consideration of the Congress later in this calendar year.

Each of the studies, while addressing unique regional conditions, will try to achieve two common objectives:

1. Demonstrate the net advantage or disadvantages to employment of supership technology, and
2. Assuming adequate net advantage, identify the most likely or most feasible sites or locations for its employment within the respective regions under study or conversely identify the most likely transportation system alternatives and associated problems in the absence of deepwater port facilities.

The purpose of our studies is not the promotion of either new navigational facilities or superships as such. We are concerned with a healthy national economy and the best transportation means to sustain a strong economy.

We are equally concerned with a transportation system which will afford maximum protection to environmental values.

One of our most important research efforts in support of the regional studies was to survey (through A. D. Little, Inc.) foreign experience in use of supership technology.

The A. D. Little report, "Foreign Deepwater Port Development, A Selective Overview of Economic, Engineering, and Environmental Factors," conveys crucially important lessons with regard to total environmental impacts of deep water development.

Potential landslide impacts, as well as marine pollution problems, must be given thorough consideration, and our reports will make this point.

Further, the Corps fully recognizes that decisions on deep port development, particularly for supertankers, must be framed in the broad context of national energy policy, and the role foreign sources are anticipated to play in satisfying domestic energy requirements.

The basic findings to date are as follows:

Most crude petroleum deepwater port alternatives studied show highly favorable economic benefit/cost ratios. However, hypothesized deepwater transshipment ports for handling dry bulk imports and exports on the east and gulf coasts appear, at least at present, economically unjustified. Benefit-cost ratios for dry bulk facilities are significantly less favorable than those applicable to crude petroleum facilities for three reasons:

1. Total commodity flows are substantially lower.
2. Unit ocean transport savings are less.

3. Transshipment costs to and from deepwater ports are higher than for petroleum.

The prospective justification for deep port facilities to accommodate petroleum supertankers varies considerably between regions.

In the North Atlantic region, for example, such facilities could now be economically employed to service existing refining facilities.

On the gulf Pacific coasts, new deepwater facilities would be economically justified only if the volume of crude imports increased substantially.

If any significant rise in crude oil imports is to be acommodated, the size and number of relatively small vessels maneuvering in our bays will increase considerably if facilities to handle large tankers are not available.

For example, to supply the North Atlantic region—in particular the Philadelphia-New York corridor—with 2 million barrels of crude per day would require a fleet of about 364—70,000 dwt vessels, but only about 75—326,000 dwt ships. Simply by decreasing the number of operating ships, the chances of collision and groundings are reduced.

The fewer ships will also reduce the number of transfer operations and the consequent risk of spills.

The Coast Guard has given intensive study to the spill probability problem, and our studies are making full use of those efforts.

The Coast Guard studies are part of a larger study of the environmental aspects of deep port development which the Council on Environmental Quality has been doing in parallel with our regional studies.

Foreign experience shows that unless carefully regulated development of deep port facilities are likely to generate in the immediate vicinity onshore substantial expansion of refinery—petrochemical complexes.

Some States seek such economic expansion. Others, especially in the Northeast, do not, since industrial expansion would take place at the expense of increasingly scare open space and very profitable and needed recreation areas. The significant point is that such expansion is in no way inevitable.

Development of deep port facilities need not entail additional industrial development in the immediate vicinity of the facilities.

Determination as to whether or not industrial expansion is desirable and where such expansion should take place are separate decisions from the deep port question.

These issues can be resolved through coordinated land use planning. The industry must be prepared to work with responsible local and State officials to insure that the development and operation of energy production and industrial facilities respect the need for sustaining a varied, yet complementary, set of land uses within each State.

The traditional method of accommodating large size ships, that is increasing channel depths through dredging, is generally not a viable alternative.

In some cases, channels could be deeped only through blasting and removal of rock, a very expensive process.

In other places, channels are subject to much sedimentation and maintenance costs would be excessive.

In some cases, deeper dredging might impair or destroy fresh water aquifers. And in most cases, there is a serious environmental question of how to dispose of the enormous quantities of dredged material which would result from major deepening of existing channels.

Based on present information, only for a certain few locations on the west coast do prospects appear reasonable for channel deepening to accommodate supertankers.

There is no presently foreseeable need for the Federal Government to undertake the major capital investments which would be required to bring deepwater port facilities, storage facilities, and pipelines, into operation.

Private or non-Federal public ownership, financing, and operation of deepwater port facilities is seen compatible with the public interest if accomplished under adequate and effective Federal control and regulation.

New Federal legislation is required to insure timely decisions on permit applications by either private or State interests, as well as to insure coordinated review and inclusion of proper permit stipulations to effectively protect environmental as well as economic interests, and be responsive to both domestic and international legal obligations.

This need is recognized and comprehensively treated in the legislation submitted by the administration on April 18, 1973.

That completes my formal statement. I will be happy to respond to any questions the committee may have.

The CHAIRMAN. Thank you, General.

I have a few questions before I pass you on to some of the others.

On page 6, you talk about increasing channel depth through dredging as generally not a viable alternative.

Can you inform the committee as to how deep the channels may be dredged to presently existing ports before reaching rock or similar materials?

General KELLY. I prefer to do this for the record because it would vary in each and every port. And the depths would be significantly different, so I think it would be advisable if I provide this for the record.

The CHAIRMAN. Yes.

Is it too much of a job to try to put it into your statement at this point when you receive your transcript?

General KELLY. No.

We could put that in if you would like it at this point.

The CHAIRMAN. If you would supply that, it would be helpful.

[The information follows:]

DEPTHS AT WHICH ROCK EXIST AT SOME OF THE MAJOR U.S. HARBORS

	Rock and/or Continental Shelf (in feet)
	Continental Shelf
Atlantic Coast:	
New England:	
Boston Harbor	60
New London Harbor	60
Portland Harbor	60
North Atlantic:	
Delaware River	41
East River	40
Newark Bay, Hackensack and Passaic Rivers	35
New York and New Jersey Channels	38
South Atlantic:	
Jacksonville Harbor	44
Miami Harbor	32
Morehead City Harbor	50
Wilmington Harbor, North Carolina	38

Gulf and Pacific Coasts:

At most of the existing harbors and channel areas along the Gulf and Pacific coasts, the ocean floor for considerable depths consist of soft material such as sand and silt, and clay in some areas. Natural depths in the Puget Sound range up to 900 feet. Some rock pinnacles exist in the San Francisco Bay area at an approximate depth of 70 feet.

General KELLY. Basically, in most areas we can go to 50 to 55 feet. At that stage, you begin running into rock or other obstacles, if not in the immediate harbor you encounter it outside the harbor in certain places.

In one of the areas we have a large tunnel. In the Norfolk case we are hampered by the tunnel which is 55 feet below the water. This would be a major factor in trying to deepen that channel.

The CHAIRMAN. What do these 250,000 deadweight ton tankers need in the way of depth?

General KELLY. The 250,000 ton runs about 65 to 68 feet. This could vary depending on design. You could get a broader beam and shallower depth, but the draft of these tankers is in the 65 foot range.

The CHAIRMAN. On that same page you mention about the West Coast. For what locations on the West Coast do prospects for channel deepening appear reasonable?

General KELLY. In the Los Angeles/Long Beach Harbor area. They have been deepening the channel, and they have a long term plan which would deepen the port. The work is being done by the port itself.

The CHAIRMAN. And for what depth there?

General KELLY. Well, they foresee at least 70 feet, and perhaps deeper.

The CHAIRMAN. And what size tankers then would this depth accommodate?

General KELLY. This would take the 250,000 ton tanker. If they go deeper it could take a larger vessel. But the West Coast, as I mention in the statement is really in a different situation relative to the depths needed right now.

Madam Chairman, the demand for petroleum products is not so great there at this time as to totally justify it.

The CHAIRMAN. What is the average cost per cubic yard for dredging sand and silt?

General KELLY. This again would be very variable. It could be from 60 cents a cubic yard and up. It would depend on where you have to dispose of it. If you have to haul it out to the 100 fathom mark it is going to run the cost up.

If you have to buy land to dispose of it on shore, this is going to create a tremendous expense. This is becoming part of the environmental cost of dredging.

The CHAIRMAN. That is just what I was going to ask you, what additional cost per cubic yard is involved in transporting the dredged materials and, of course, that would depend greatly upon, as you say, whether it goes onto land or whether it goes out to sea.

General KELLY. And how far you have to take the material to get to the open water.

We could give you some more data for the record if you would like that.

[The information follows:]

On the basis of a typical job performed by hopper dredge with an average haul distance of 25 miles to the dumping ground, the cost of the dredging operation will increase at the rate of about 30 percent for every 10 miles of additional transport. In other words, the cost would double for an additional haul distance of about 35 miles.

The CHAIRMAN. If you would do that, and then could you give us some additional data on what the additional costs would be for rock blasting, if that were necessary.

General KELLY. We can give you some estimates on that.

[The information follows:]

ROCK BLASTING COSTS

The additional cost of dredging where rock is encountered could vary between about $5 to $20 per cubic yard and possibly higher depending on site conditions and the type and hardness of the rock. The lower price would obtain in those cases where the rock is relatively soft, weathered, disintegrated, fractured or in distinct and separable cleavage planes so that it is susceptible to removal directly by hydraulic cutterhead dredge or dipper dredge without drilling or blasting. The higher range of costs would apply in those cases where the rock is of extreme hardness requiring drilling and blasting, where the depth of rock to be removed is relatively small where adverse sea conditions prevail and where the work site is adjacent to highly developed areas requiring stringent controls and limitations on the amount of explosives to be used per blast for safety purposes.

The CHAIRMAN. Has the Corps made the study of what they are doing in, I believe it is Galveston, where they are looking into a plan to go 40 miles out and channel up into the Port of Galveston so they would not have to build the superport offshore?

General KELLY. This was considered by our field personnel in the Gulf deepwater port study but we found that this was not economically justified in our initial review.

We are doing some additional studies to see what the cost would be.

The CHAIRMAN. To your knowledge, do we have the capability in this country for the contractors to do this type of work?

For instance, if they decide on this 40 mile channel, and at a depth of somewhere around 40 or 50 feet, would we in this country have any company that would have that capability?

General KELLY. At 40 to 50 feet, yes.

When we get to 70 feet, we about reach the limit of the Corps' capability in dredging equipment. However, I am certain the necessary dredging equipment would be available to industry. They could obtain them if they decided it was worthwhile. They are available in the world fleet. Whether they have the capability in hand right now, I am not prepared to answer.

The CHAIRMAN. I was going to ask you do you have any knowledge of any foreign countries that have that capability?

General KELLY. There are a number of countries with the capability. They are dredging in the channel off of Great Britain. There is dreding in the Netherlands. The Dutch have this capability, and there are a number of other countries who have this deepwater capability.

The CHAIRMAN. I have two other questions, but my time has expired because we are under the 5 minute rule.

I just want to ask these questions for the record, and I believe you can answer them later on.

What is the present authority, if any, of the U.S. Army Corps of Engineers relative to activities on the Outer Continental Shelf beyond the territorial waters of the United States?

[The information follows:]

AUTHORITY FOR CONSTRUCTION OF A SUPERPORT

The statutory authority for construction and operation of a superport within the territorial seas clearly comes within the scope of the River and Harbor Act of 3 March 1899, 33 U.S.C. 401 et seq. The Outer Continental Shelf Lands Act extended these authorities to the continental shelf, 43 U.S.C. 1333(f), and the Corps in conjunction with the Department of Interior thus has regulatory authority over construction on the continental shelf beyond the territorial sea. The adequacy of this authority relative to operations of deepwater superports is not as clear, and would require careful drafting of any permits issued for construction of offshore ports.

The CHAIRMAN. The other question is, if deepwater offshore terminals are permitted, what would be the budgetary impact on your Agency?

You can supply those answers for the record, as I said.

[The information follows:]

BUDGETARY IMPACT

The budgetary impact would be relatively small and would be for financing our permit functions under the River and Harbor Act of 1899.

The CHAIRMAN. Mr. Downing is recognized.

Mr. DOWNING. Thank you, Madam Chairman.

Has the corps gone so far as to study the selection sites for these deepwater terminals?

General KELLY. Yes; we have looked at the specific locations in these reports but only at the first level of detail. In other words, not to the extent that we would be prepared to recommend issuing a permit at a specific site.

Our environmental studies have not been in that detail as far as ocean currents and the like. But as far as depth of water, economics, the overall capabilities, the studies will address these in considerable detail.

Mr. Downing. The second question is on the one the chairman submitted for the record.

An individual citizen now, could he go out and establish a deep seaport himself without permission from the Corps of Engineers?

General Kelly. If we look at the space out to the 3-mile limit, certainly not. There is no question that permitting would be required by the corps, and in many cases by the States, as well.

Mr. Downing. Is there any restriction that you know of which is imposed on him by present law?

General Kelly. Beyond the 3-mile limit, sir?

Mr. Downing. Yes.

General Kelly. I would not be the best man to answer that. I cannot cite one.

Mr. Downing. I will not ask the question then. It is your considered opinion, or the Corps of Engineers opinion that the deepwater port is much more preferable than the dredging of channels in the existing harbors?

General Kelly. Yes, sir, we would see that as more economic, and certainly in the cases we have looked at, the more desirable approach from an environmental point of view as well.

Mr. Downing. Thank you; you have given us a very fine report.

The Chairman. Mr. Forsythe?

Mr. Forsythe. Thank you, Madam Chairman.

General Kelly, just two questions, and you may not have this at your hand.

Insofar as the technology of transfer from a deepwater port offshore is concerned is the corps studying this, and if not who is reviewing this part of the problem?

General Kelly. We are looking at it, sir. It will not really be a major portion of our report, however. We are working with other agencies in trying to stay abreast of the technology.

It appears the technology is there, but it also appears that the technology could be improved, and I am sure it is being improved.

We are not including this aspect as a major portion of our report.

One of the reasons is that the transfer problem exists whether you have a supertanker or not. Particularly if you get into lighterage from larger ships out in the stream. We simply had not considered this as a major factor in our studies.

Mr. Forsythe. Well, certainly it becomes a major factor, if the environmental considerations are to be protected. If we are only going to bring a monster tanker into a deepwater port, and then have all the problems of the multiple vehicle transfer situation, we have not really gained much from an environmental standpoint, have we?

General Kelly. I feel certain this is a factor that has been considered in the spill studies which were conducted primarily by the Coast Guard. They have been looking at the international experience to get information on the spill problem which is largely a function of the connection and breaking of connections of the transfer.

Mr. Forsythe. This would be the Coast Guard's field?

General Kelly. Primarily, yes.

Mr. Forsythe. As a matter of fact, I am getting into the same area when I ask about the technology on supertankers.

Is the corps looking at this from a safety standpoint, in terms of technology?

General Kelly. Really very little. The aspect that we have looked at is primarily in the potential, and we are just doing a small study, of a shallower draft supertanker. In other words, what is the impact of broader beam? Is it reasonable? And how would it affect the dredging requirement?

As far as the other aspects, we really have not gotten into it.

Mr. Forsythe. I believe that is all.

Thank you, Madam Chairman.

The Chairman. Mr. Studds?

Mr. Studds. Thank you, Madam Chairman.

General, I have some questions, particularly pertaining to the attachment to your testimony from the Department of the Navy.

Is it in order to ask you about that?

General Kelly. Yes, sir.

Mr. Studds. What intrigues me in the opposition to H.R. 5091 by the Navy is their reasoning that it, in fact, constitutes interim unilateral action by the United States on a subject on the agenda of the Law of the Sea Conference, namely construction of deepwater ports prior to the Conference, and the gist of the argument is that the enactment of this bill with its assertions of sovereignty over marine areas seaward of the territorial sea would erode the United States position at the Conference.

What I do not understand is why the administration's bill, H.R. 7501, which is referred to in the Navy's statement here as the ideal way to handle this, does not raise exactly the same problems.

You refer us then to H.R. 7501, and you say the approach there taken involves a determination that the construction and operation of superports is a reasonable use of the high seas.

A determination by whom? Presumably unilaterally by the United States.

Why does that not raise precisely the same objection as the other bill?

General Kelly. I will give a brief answer, and will expand on it for the record if I may.

Basically, in the drafting of the administration's bill this was one of the prime factors in couching it in terms which predicated deepwater ports as a "reasonable use of the high seas" so that there would be no further claim of sovereignty in the area under consideration.

Any extension of Federal jurisdiction over a deepwater port located outside the territorial waters will necessarily raise questions involving principles of international law. Initially, as a matter of international law, it is necessary to establish a basis for construction and operation in high seas areas of deepwater ports. The administration based its bill on the theory that the construction and operation of a deepwater port is a reasonable use of the high seas. Under this theory sovereignty is not asserted over the high seas. However, physical uses which are consistent with reasonable regard for other high sea users are, under international law, permissible. In this age of rapid technology, the use of deepwater ports would be an acceptable adaptation of high seas usage and, arguably, a necessary concomitant of freedom of navigation. At the same time, we, as a nation, must insure that the deepwater port facility does not unduly interfere with freedom of navigation, marine scientific research, or submarine pipelines and further, that it does not unreasonably interfere with foreign fishing or navigation. A properly located deepwater port can also serve as a port of refuge, a weather or atmospheric monitoring station, and a site for navigational aides. Finally a deepwater port facility can further aid navigation by relieving the traffic congestion in other port areas and, thus, reduce the dangers of collision and/or marine pollution.

H.R. 5091 may be construed as a unilateral assertion of territorial sovereignty over the site of the deepwater port facilities, extending sovereignty to individuals and ships at the deepwater port and in the waters adjacent to it. It is this unilateral assertion of territorial sovereignty beyond the territorial sea to which the Department of Defense has objected. It is the policy of the United States, neither to make nor to recognize unilateral claims to sovereignty beyond the territorial sea except as provided in customary and conventional international law (9-mile fishing zone and contiguous zone for enforcement of customs, fiscal, immigration, and sanitary regulations). In order to preserve a narrow territorial sea throughout the world, which is essential to our security interests, the United States has consistently protested the unilateral extension of coastal-state sovereignty and jurisdiction by other nations, and has steadfastly maintained that such matters should be dealt with on a multinational basis at the forthcoming Law of the Sea Conference.

H.R. 5898 asserts that any "person" who wants to construct, operate or maintain a port facility beyond the territorial sea of the United States must get a permit from the U.S. Government. The term "person" although not defined in the bill, clearly includes foreign persons. Such a unilateral claim to exercise personal jurisdiction on the high seas for purposes indicated in H.R. 5898 and as written H.R. 5898 is contrary to present international law.

Mr. STUDDS. In other words, you would not object to H.R. 5091 if it did not have language that could be interpreted as an assertion of sovereignty, but simply to provide for the reasonable use of the high seas; for example, the development of superports.

General KELLY. I would say that aspect of it could certainly be clarified.

I think there would be other objections that the administration would have.

Mr. STUDDS. Would there be other objections with regard to prejudicing the Law of the Sea Conference?

General KELLY. I do not believe so.

Mr. STUDDS. Then by the same logic you have no objection to extending our fisheries jurisdiction prior to the Law of the Sea Conference.

General KELLY. I think we have gone beyond my limited area of expertise.

Mr. Studds. I think the administration is in an inconsistent position to argue on the one hand that it is reasonable with regard to an item which is, in fact, on the agenda of the Law of the Sea, agenda item No. 18, the question of deepwater ports, that in this case interim unilateral action by the United States is reasonable, but in another case, the effort to preserve fisheries—it is not reasonable. This strikes me as inconsistent, and I want to try again and again to get that point on the record, and see if we can clear that up.

Madam Chairman, do I have time for one more question?

The Chairman. Yes.

Mr. Studds. You say in your statement, General, that in the North Atlantic regions such facilities could now be economically employed to service existing refinery facilities.

Could you tell us which existing facilities are indeed sufficient to utilize these?

General Kelly. Basically, the economics of the deep port fluctuate about 1 million barrels a day requirement and the import in the North Atlantic area is at that level now.

This is the premise upon which that statement is based. The refineries in existence, or certainly these with modernization, could justify a deep port.

These would be the existing ones on the Delaware River and in the North Jersey area.

Mr. Studds. Thank you very much.

Thank you, Madam Chairman.

The Chairman. Mr. du Pont?

Mr. du Pont. Thank you, Madam Chairman.

Madam Chairman, I have quite a list of questions here, and I would hope that if my 5 minutes expires, that when the other members have completed their questions, I might come back again.

General Kelly, does the Army Corps of Engineers have a position as to where a superport ought to be located?

General Kelly. No; not as far as saying one should be built in a specific location.

I would say our conclusion is couched in the terms that, after review of the economic and environmental aspects, superports could logically be developed at this location, a, location b, or if a certain size, perhaps location c. In the gulf, three or four locations are possibly depending upon where the industry develops new refineries.

Mr. du Pont. Have you picked the locations a, b, and c?

General Kelly. We have sited spots which we think would be reasonable locations; yes, sir.

Mr. du Pont. Well, that confuses me a little, General. I have here your report of January 8, Colonel Strider of the District, and on the front page of that, and I quote:

> I find that the most efficient and economical sites to provide facilities for handling very large crude carriers in the North Atlantic region would be located in the Atlantic Ocean, Long Branch, Cape May, New Jersey, or at Delaware at the Big Stone Beach.

Then it goes on to the next page and talks about tanker size increasing above 325,000 tons, and it says, and I quote:

In that case, the most economic and efficient system would be a mono-buoy system off Long Branch, New Jersey, and a facility located in Delaware off Big Stone Beach, Delaware, serving the Delaware River refineries.

That sounds pretty specific to me, General.

General KELLY. Yes, sir, but I do not believe that we have necessarily recommended their construction.

We have found that the most efficient and economical locations in our views are as cited, based on our studies.

I do not believe we recommended their construction, certainly not by a Federal agency.

Mr. DU PONT. You have not really recommended their construction, but in this report you are kind of recommending that if they were to be constructed, these would be good places to put them?

General KELLY. Yes, sir. They would appear to be logical locations. But certainly this would not preclude another location. But these, in our view, would appear to be the most logical.

Mr. DU PONT. Would be the best ones?

General KELLY. Yes, sir.

Mr. DU PONT. All right now, you testified this morning on page five of your testimony, and page four, that our experience shows unless carefully regulated, development of deepwater port facilities will likely develop some expansion of petrochemical complexes, and you say the significant point is that such expansion is in no way inevitable.

Now, on page 15 of your January report you say therefore, the construction of a port will not only generate new refinery activity in close proximity to a terminal facility, but could also induce the establishment of larger petrochemical complexes in the same vicinity.

It seems to me that that is not consistent. Do you think we are going to have refineries or not?

General KELLY. If I may refer to page 14, the opening sentence, which unfortunately did not carry through very clearly throughout the paper you refer to, States that for an evaluation of land site impacts an underlying assumption is, that given the free interplay of economic factors and the absence of control over industrial siting, the location of deepwater ports will intend to induce industrial concentration—this is what was found to be true in the foreign situations. There were no controls. Industrial development just grew like Topsy, and the point we have tried to make in our studies is that the public should recognize this as a potential problem. If you are going to construct a deepwater port, recognize that there will be pressures. The State agencies must take action to recognize this and plan accordingly. That is our point.

Mr. DU PONT. Does the Army Corps of Engineers believe that the States policies on superport location ought to be respected by the Federal Government?

I am sure you know I am referring to the Delaware Coastal Zone.

General KELLY. Sir, we would recognize that the development on land is certainly going to be a State controlled function, and that under Corps policy, a permit for development within the 3-mile limit would not be issued without the approval of the Governor of the State.

That is our current policy on permitting. In that sense, we would recognize the State's view has a very significant impact on the situation.

Mr. du Pont. Now, General, let me come back to a question asked a moment ago by Mr. Studds.

I see my 5 minutes has expired, Madam Chairman, could I come back to those questions after the other gentlemen finish?

The Chairman. Why not ask them, and he can answer them briefly, and enlarge upon them if he wishes to do so?

Mr. du Pont. Thank you, Madam Chairman.

General, you stated that you thought a superport facility could be economical in terms of serving existing refineries.

I thought the objective here was to get more oil to the United States because we have an energy problem. Is not the real objective of a superport to increase our oil available to be refined, and thus really mean the building of a lot more refineries?

Is that not what we are really after?

General Kelly. My reaction would be negative in the context of the North Atlantic.

I believe the purpose of a superport is to import that amount of crude oil that needs to be imported as economically as possible and in an environmentally safe manner as is possible.

In the North Atlantic, the quantity now being imported would justify economically the construction, and would appear to be environmentally superior than the present system.

Mr. du Pont. In the interest of time I will ask my last question very quickly.

General, you conclude in your reports basically that the further offshore you put a facility the less likelihood there is of pollution, the less damage, and at the same time you recommend Big Stone Beach, Delaware, which is 15 miles up the Delaware River.

I do not understand the inconsistency.

General Kelly. I think the spills causing the pollution are not much different. However, the effects of any polluting spills that gets to the shore will be reduced by the time and distance factors.

At Big Stone Beach one of the basic advantages is that you could contain better that which is spilled, I think the damage in the contained areas might be more severe, but you would have lesser area affected.

There are differences of opinion on this question. We definitely do not claim to have all the answers.

Mr. du Pont. Thank you, Madam Chairman.

The Chairman. Mr. Treen?

Mr. Treen. Thank you, Madam Chairman.

General, I believe that one of the sites the Corps has looked at is off the coast of Louisiana, about 18 miles off the coast of Louisiana, in the vicinity of Bayou LaFourche, is that correct?

General Kelly. Yes, sir.

Mr. Treen. I believe in your January report it was concluded that from the physical standpoint that that was a feasible location for a deepwater port, is that correct?

General Kelly. That is correct.

Mr. TREEN. Has anything occurred since that study to change the opinion of the corps? Has there been any additional information or input that would affect that conclusion?

General KELLY. No, nothing significant. We have continued down the line that this site appears to be one of the viable solutions in the gulf.

Mr. TREEN. Would you care to compare the different locations that the corps has concluded are feasible, without reference now to what an adjoining State might want, but in terms of all the factors considered in your report?

Let me tell you first of all that I am from Louisiana. We very much want that port.

General KELLY. I understand.

Mr. TREEN. I think I can speak to the extent that the State desires it. and it is an important element, and certainly I am confident in saying this, that I am voicing the opinion of all public officials in Louisiana who would very much like to have that site approved for at least one of the oil import facilities.

General KELLY. The reason I delayed in answering your question was that I had the impression that you are asking for an evaluation in order of priority.

Mr. TREEN. Yes.

General KELLY. I would hesitate to make that. I do not believe our study is in that detail, and I certainly do not have the information with me.

We find that there are three or four sites which would be acceptable from the environmental point of view and are also economically justified, but much is dependent upon certain future happenings, such as future refinery locations. This would appear to be an industry decision, and it would tend to determine the best port location.

As far as saying whether your port is better than Freeport, or Mobile, we have not reached such a conclusion.

Mr. TREEN. Would it be fair to say that the site you studied off the coast of Louisiana, you found it to be ideal?

General KELLY. We found it to be one of the better sites.

Mr. TREEN. Now, under the administration's bill, what will the corps' input be into the decision? Under the administration's bill the Secretary of the Interior would issue the license.

General KELLY. As we would see it, our involvement would be pretty much the same as it is now, except that we would not issue the final license or permit.

We would be concerned about the navigational aspects. We would be involved in the permitting of anything within the 3-mile limit, and also we would expect to be involved in the engineering view and analysis of the proposed construction.

Mr. TREEN. This is my last question.

Have you received any applications from any firms or persons or local government agencies for any kind of permits in connection with the construction of a deepwater port off the coast of Louisiana?

General KELLY. I have no knowledge of them here in Washington. If they have been recently received in Louisiana, I am just not familiar with them. I will check that and provide it for the record.

[The following was supplied in response to the foregoing:]

No applications for permits to construct a deepwater port off the coast of Louisiana have been received to date.

Mr. TREEN. I appreciate that.

Thank you, General.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Metcalfe?

Mr. METCALFE. No questions.

The CHAIRMAN. Mr. Lott?

Mr. LOTT. Thank you, Madam Chairman.

General, I would like to thank you for a very fine statement.

I would like to ask you to expand on a couple of sections. You have had hearings throughout the Gulf Coast area. Where have those hearings specifically been held? Can you give me that information?

I know that you had a couple of hearings in Mobile.

General KELLY. Tampa, Fla.; New Orleans, La.; Mobile, Galveston, Tex.

Mr. LOTT. And you have determined that, I believe, on two occasions you have mentioned this morning you feel three or four varieties of superports could possibly be constructed in the Gulf, is that correct?

General KELLY. That is correct.

Mr. LOTT. And without any expected congestion or environmental problems as a result of more than one or two.

General KELLY. That is our view. The environmental part is still really being worked out. That has not been completely done.

This view is primarily from the economic justification aspects, and the initial look at the environmental aspects.

Mr. LOTT. General, expand just a little bit on what you look at on trying to decide whether or not a site is feasible. I know you consider the environmental part of it.

What else do you consider? These reports you are going to present to the Congress, exactly what do you look at? Give me a variety of things you look at.

General KELLY. We look at the depth of water.

Mr. LOTT. Present depth of water?

General KELLY. Yes. Current flow, location relative to the marshland and degradable marshland assets, adjacent shoreland that could be utilized for the tank farms which will be required, if not existing already.

I think the market and the existing refineries certainly are the driving force in the initial look, because in the Gulf, we are really transitioning from local crude sources to offshore crude, and the initial transition will be to existing refineries.

That is the first step, and these two factors would have a great deal to do with the location of deepwater ports.

Later, as you get a growth in demand for product and a demand for new refineries, comes the question of where the new refinery is going to be located. This uncertainty is why you can find a number of viable ports. If industry decides they would like to locate a refinery in a given location, it might then justify a deep port. This is a function of the economics which is quite dependent on the States' policies.

Mr. LOTT. You do consider available transportation off the shore?

General KELLY. Pipeline locations.

Mr. LOTT. Do you consider the proximity of the shoreland to the deepwater port?

I know off Mobile there is close deepwater, only 12 miles.

General KELLY. That is correct. Also, we look at the economic benefits to the area.

Mr. LOTT. That is the point I would like to seize on.

You do consider, I believe, that Congress directed that the economics be looked at, and that that does not necessarily mean, as Mr. du Pont was saying, the superports should be constructed in the area where they will benefit existing refineries. It can also be involved looking at an area that economically needs this, or has the land for an expansion, or where you can add refineries without additional problems, is that correct?

General KELLY. That is correct. We would see, in the Gulf area, that construction of ports and the consequent increase in refineries and petrochemicals would be an economic boost to whatever area it happened to go into. But it carries with it certain problems, of course. It carries with it the additional requirements for schools and roads, and other municipal services. We are trying to spell this out in our studies to alert the local governments that there will be certain burdens that come along with this rapid growth.

Mr. LOTT. You mentioned here you are also trying to identify the most likely transportation system alternatives.

Have you come up with any alternatives?

General KELLY. This was stated in the context that if we determined the deep ports were not really a desirable thing, what were the alternatives?

One of the alternatives, of course, is the development of a transshipment facility in the Bahamas, or up in Canada.

These are viable alternatives, but they certainly appear to be less desirable from our point of view.

Mr. LOTT. One final question, General.

Like my distinguished colleague here from Louisiana, I represent an area interested in this Pascagoula-Mobile area.

Have your reports indicated that to date there is a possibility of a site off the Pascagoula-Mobile area that would be a feasible one?

General KELLY. Yes, sir, we find that area is a good location.

Mr. LOTT. Thank you very much.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Pritchard?

Mr. PRITCHARD. Thank you, Madam Chairman.

General Kelly, what sites in the Northwest part of our country are considered reasonable sites?

General KELLY. There were a number in the Northwest primarily because the Northwest has natural deepwater. We find that in the Puget Sound area there are a number of specific sites that are feasible.

Mr. PRITCHARD. Had you thought of having the deepwater port right in the sound, or off the sound?

General KELLY. Actually, it is capable of being constructed there virtually just off the shore, by the construction of a pier.

Mr. PRITCHARD. That is what concerns us.

General KELLY. This would be feasible. Of course, you could also go offshore.

One of the advantages in being in close is that you do have a little better control of the ship when it is tied right into a fixed facility.

We are really not as far along on our west coast study. I have much less detail there as they started later.

Also we find that the demand, the economic justification on the west coast is trailing both the gulf and the south Atlantic. It does not really crossover and become a paying thing until the late 1970's.

Mr. PRITCHARD. The Northwest, or on the west coast?

General KELLY. The west coast as a whole, really.

Mr. PRITCHARD. With California being the market, would that not be the logical place?

General KELLY. That is right. Both the San Francisco and Los Angeles areas have been considered.

Part of the problem, of course, is where the refineries are going to be located. The refineries will tend to be located where the demand would be for the increased imported crude.

Mr. PRITCHARD. In the Northwest, would it be a matter of piping it from there?

General KELLY. You could either pipe the crude, or refine it, and move the product. But that would not appear to be economic.

Mr. PRITCHARD. I am sure, as you know, we are not exactly like our gulf coast neighbors. We have lots of people who are very disturbed and concerned about having a deepwater port, in light of the amounts of crude oil that are being brought into the sound now. We have sharp differences of opinion.

Have you ever seen one of these deepwater ports?

General KELLY. No, sir; I have not.

Mr. PRITCHARD. I have been asking just about everybody, and I have yet to run into anybody who has seen one.

General KELLY. My predecessor, who was involved in this work until December when I came in, went to Japan and did view their deepwater port sites and refinery locations.

We also have certain people in the office who have observed them, but I have not personally.

Mr. PRITCHARD. If a deepwater port is built I take it that it would be done by a private company? Would this port serve just one company, or will it be shared by others?

General KELLY. Not logically. In the gulf, for instance, there are consortiums of 10 or 12 companies who are working together.

It would appear that from a trade point of view, and a monopoly point of view, the likely solution would be a grouping of companies who would operate a port as a public facility available to most anyone who wanted it.

Mr. PRITCHARD. But the legislation under consideration does not guarantee that port will not be monopolized by a single company? They could be set up in any manner, right?

In other words, three outfits could set up a superport, and it would be up to them whether they opened up to others. They could have great leverage.

General KELLY. They recognize this problem. In the discussions I have had with the oil companies they recognize the antitrust problem.

Mr. PRITCHARD. Do you think it is necessary to write appropriate language into this legislation?

General KELLY. I was looking at my papers to see if it had been put into the bill. I cannot answer right off the top of my head as to whether it is in the bill or not.

Mr. PRITCHARD. I think it is terribly important that we do not allow a few companies to have a fixed facility, because it opens up the door to all types of antitrust problems.

General KELLY. This is definitely a problem. The number of deepwater ports is not going to be unlimited. They are going to be limited in number, and therefore, there does have to be some assurance there is free access to these facility.

Mr. PRITCHARD. That is all.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Bowen?

Mr. BOWEN. No questions.

The CHAIRMAN. Mr. Cohen?

Mr. COHEN. Thank you, Madam Chairman.

General Kelly, I just have one point I would like to discuss with you.

There have been some studies conducted in the North Atlantic region, is that correct?

General KELLY. Yes.

Mr. COHEN. And that would include the coastline of Maine, as well?

General KELLY. Yes.

Mr. COHEN. What specific areas were studied for consideration of a deepwater port?

General KELLY. In the Maine area, we looked at Machiasport, early in the study then my recollection is that this was one of those areas which dropped out primarily because of the lack of existing landside development. We just did not consider at it as one of the prime locations.

In our studies we have not really recommended anything in the Maine coast as a likely spot.

Mr. COHEN. When you say "we," is this the Coast Guard or the Corps of Engineers?

General KELLY. The Corps of Engineers.

Mr. COHEN. They have not then recommended any point in Maine for active consideration for a superport?

General KELLY. We have not found any site in Maine to be one of the more logical locations for siting from an economic point of view.

Mr. COHEN. From an economic point of view? Why do you say that?

General KELLY. Just based on the fact that we have certain areas which are developed as refinery areas in the North Atlantic area, and that the logical location for the port would be near the existing refinery areas. The justification to put one in an area that has no significant facilities such as Machiasport would make it questionable from the economic point of view.

At the time we looked, there was not a great interest in Maine in developing the needed infrastructure, and without this the port is not needed.

Mr. COHEN. When you make reference to the economics, though, it seems on the one hand you are suggesting the Federal Government ought not to get involved with financing any portion of such a port, and leave it up to private industry.

In your opinion, would private industry be in a better position to determine the economics of constructing a refinery?

General KELLY. There is no question they would. This is the reason, that when we say this looks like a logical location, one has to keep in mind that if it should be an industry-developed facility, that they may not agree with our analysis.

Mr. COHEN. At least from the Corps of Engineers' point of view it was not economically sound?

General KELLY. Right.

Mr. COHEN. Are you aware of that the area of Eastport, Maine, is being considered for a refinery, that an application has been filed on behalf of Pittston?

General KELLY. I read that in the paper.

Mr. COHEN. You are not familiar with that?

General KELLY. No, I am not.

Mr. COHEN. I was just wondering would your studies, or that is the Corps of Engineers' studies have dealt in any detail with tides in the Machiasport or Eastport area?

General KELLY. I feel certain that we would have that material in our backup studies.

Mr. COHEN. There seems to be a legitimate debate taking place as to whether or not the force of the tides in that area would make it environmentally unsafe for the large supertankers to traverse those waters.

Perhaps you are familiar that the Canadian Cabinet has recommended against allowing the supertankers to cross their waters.

General KELLY. I have read that in the papers.

Mr. COHEN. Do you have any opinion as to whether or not that is motivated by their own economic concerns rather than environmental concerns?

General KELLY. I really could not state, sir.

Mr. COHEN. You have no opinion?

General KELLY. I have no background to form such an opinion.

Mr. COHEN. Thank you, Madam Chairman.

The CHAIRMAN. Any other questions?

Mr. DOWNING. One question, Madam Chairman.

General Kelly, has the Corps made any study as to what is the most suitable type of deep seaport, whether it be monobuoys or fixed platforms?

General KELLY. I think our view would be that the most likely and logical one to be developed is the mono-buoy, primarily from an economic point of view.

There are others who believe that a fixed facility, a pier or an island, is superior, and I agree it would have certain advantages.

It has also certain disadvantages if the seas are of a certain type. But economics, in our view, will tend to lead you to the single point mooring or mono-buoy system.

Mr. DOWNING. Thank you.

The CHAIRMAN. Thank you very much, General, for your testimony. The staff will forward additional questions to be answered for the record.

[The questions and answers follow:]

Question 1.—Provide a detailed listing and analysis, with reasons therefore, of all the laws and programs administered by the Corps of Engineers which would have impact upon or be affected by enactment of H.R. 7501 or similar legislation providing for the construction and operation of deepwater ports. Indicate which, if any, of these laws should be specifically amended, repealed, modified, or expanded in the provisions of such legislation.

Answer.—Pursuant to Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403), the Army Corps of Engineers exercises regulatory authority over any activity in or affecting navigable waters of the United States, including dredging. This regulatory responsibility encompasses onshore as well as offshore activities when the particular onshore activity will affect the course, condition or capacity of a navigable water of the United States. Navigable waters of the United States have been administratively defined by the Corps (see 37 Federal Register 18389, September 9, 1972) and generally include those waters, including the territorial seas, which are subject to the ebb and flow of the tide or which have been used, are used, or are susceptible of use as an instrument of interstate commerce. The Outer Continental Shelf Lands Act (43 U.S.C. 1333 (f)) extended this regulatory authority to the construction of artificial islands and fixed structures on the outer continental shelf beyond the territorial sea.

In addition, pursuant to Section 404 of the Federal Water Pollution Control Act (PL 92–500, 33 U.S.C. 1344), the Corps also exercises regulatory authority over the discharge of dredged or fill material in navigable waters. Navigable waters as defined by this Act include the waters of the United States including the territorial seas. Section 103 of the Marine Protection, Research & Sanctuaries Act (PL 92–532, 33 U.S.C. 1413) also places regulatory authority in the Corps for the transportation of dredged material for the purpose of disposal in ocean waters. Ocean waters as defined by that Act mean those waters of the open sea lying seaward of the baseline from which the territorial sea is measured. These additional regulatory programs pertain to offshore activities and could also pertain to onshore activities if those activities involve disposal or placement of dredged or fill material.

Generally, as expressed in interim Corps regulations contained in FR 12217—10 May 1973 the decision to issue a permit will be based on an evaluation of the proposed structure or work and its intended use on the general public interest. Factors which are considered in this public interest review include conservation, economics, esthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use classifications, navigation, recreation, water supply, water quality and, in general, the needs and welfare of the people. In those permit situations involving the construction of fixed structures or artificial islands on the outer continental shelf lands which are under mineral lease from the Department of the Interior, the Corps decision as to whether a permit will be issued is based on an evaluation of the impact of the proposed activity on navigation and national security. In all other permit cases involving the construction of fixed structures or artificial islands on the outer continental shelf, the Corps evaluation is based on the impact of the proposed activity on the general public interest, considering the factors indicated above.

Additionally, the Corps has general authority under specific authorizations by Congress, either legislative actions or resolutions by either the House or Senate Public Works Committee, to undertake planning investigations of water and related land resources projects. The regional deepwater port facilities studies for the North Atlantic, Gulf and West coasts are planning investigations authorized by resolutions.

Under the provisions of H.R. 7501, the Corps of Engineers interprets its responsibilities within navigable waters of the United States, including the territorial sea, as generally remaining the same. H.R. 7501 would specifically extend authorities of the Secretary of Army discussed above to deepwater ports. There appears to be no need to amend, repeal, modify or expand any provisions of the existing laws administered by the Corps of Engineers.

Question 2.—Provide a detailed analysis of exactly what role the Corps of Engineers and DOD will play upon enactment of H.R. 7501, or similar legislation, in terms of federal agency responsibility, inter-agency coordination, and regulation of the construction and operation of the deepwater port.

Answer.—The Army Corps of Engineers exercises broad regulatory authorities over activities in or affecting navigable waters of the United States (33 U.S.C. 401 et seq.), as well as the deposit of dredging or fill material in navigable waters (Sec. 404 of F.W.P.C.A., PL 92–500). Section 111 (b)(1) and (2) of H.R. 7501 specifically extend those authorities to deepwater ports.

Question 3.—Assuming enactment of H.R. 7501 or similar legislation, provide a five-year cost estimate of the Department of Defense and the Corps of Engineers, in terms of monies and personnel, which could be required to implement these agency responsibilities.

Answer.—As previously submitted for the record to this Committee, the budgetary impact would be relatively small due our existing capability and would be for financing our permit functions. Permit functions could necessitate considerable funding outlays for environmental assessment; however, since the Department of Interior has the responsibility under H.R. 7501 for preparing the environmental impact statement it is expected that funding will be provided by that Agency.

Question 4.—In regard to Congressionally authorized "regional navigation studies" cited by you on page 286 and 287 of the transcript, provide a listing of those studies undertaken, completion status, synopsis of findings and conclusions, and specific actions and timeframes required to complete such studies.

Answer.—In December, 1970, Congress authorized the first study of regional navigation requirements, "with particular reference to economies afforded by the use of supersized bulk transport vessels and tankers." The first regional study authorization pertained to the Texas Gulf coast. Subsequent study resolutions expanded the study assignment to cover the Gulf coast from Brownsville, Texas, to Tampa, Florida, and also authorized regional assessment of navigational facility requirements for the North Atlantic and Pacific coasts.

Despite differing times for study authorizations and appropriation of study funds, the Corps scheduled the three regional studies in concert, with first field-level reports for each region to be completed by about 1 July of this year. Each of the studies, while addressing unique regional conditions, was to achieve two common objectives:

a. Demonstrate the net advantage or disadvantage to employment of supership technology, and;

b. Assuming adequate net advantage, identify the most likely or most feasible sites or locations for its employment within the respective regions under study, or conversely, identify the most likely transportation system alternatives and associated problems, in the absence of deepwater port facilities.

Report Summaries

A short synopsis of each of the three Corps of Engineers deep port studies follows:

Gulf Coast

The Gulf coast deepwater port study included the Gulf coastal area between Brownsville, Texas, and Tampa, Florida. Historically, the Gulf coast has been a surplus producer of domestic crude oil and refined products. Current projections indicate that production of crude oil along the Gulf coast is peaking and will begin to decline in the foreseeable future. However, current demands by the crude oil deficient areas of the Southeast, Northeast, and Mid-Continent have increased total demand for Gulf coast crude oil and finished products to this point where importation of foreign crude oil to the Gulf has become necessary.

Crude oil imports are projected to come from the Middle East and North Africa. Without deepwater port facilities along the Gulf, small vessels may continue to transport the crude oil direct to the Gulf, utilizing existing navigation channels; or, more likely, very large crude oil carriers will transport the crude oil to a deepwater port in the Bahamas, and transfer it to smaller vessels for transshipment to the Gulf. Thus, a deepwater port in the Bahamas was used as the base condition in our economic analysis.

The following deepwater port facility systems were investigated:

a. No action (existing system).

b. A five dredged-channel-system to inland ports with depths ranging from 60 feet to 100 feet. The channels included in this system are Mobile Harbor; Mississippi River, Southwest Pass to Baton Rouge; Sabine Pass; Galveston Harbor; and Corpus Christi.

c. A system of artificial islands protected by breakwaters for offloading supertankers and storing crude oil located offshore in approximately 100 feet of water with barge or pipeline distribution to the refinery complexes. The three site locations considered are in the vicinity of Mobile-Pascagoula (approximately 32 miles offshore); Bayou Lafourche (approximately 17 miles off the Louisiana coast); and, Freeport (30 miles off the Texas coast).

d. Monobuoy systems located offshore in approximately 100 feet of water with pipeline distribution to intermediate landside storage and barge or pipeline distribution to the refinery complexes. The monobuoy site locations considered were:

(1) Panama City (13 miles offshore).
(2) Pensacola (24 miles offshore).
(3) Mobile-Pascagoula (32 miles offshore).
(4) Southwest Pass (15 miles offshore).
(5) Bayou Lafourche (17 miles offshore).
(6) Sabine Pass (80 miles offshore).
(7) Freeport (30 miles offshore).
(8) Corpus Christi (23 miles offshore).

The dredged channels, artificial islands, and monobuoy systems were considered as mutually exclusive systems; therefore, no combinations were investigated.

Evaluation of these systems showed that the no-action alternative would pose a more direct threat to estuaries and marshes than offshore facilities and the probability of oil spills would be greater. However, secondary (landside) impacts would be less than with the other alternatives because of dispersion. The dredged channel system would have the most direct impact on the environment; the monobuoy system the least. Offshore facilities would generally reduce possibilities of oil being spilled directly into biologically productive estuaries and marshes; but, depending on location, associated secondary development may place a severe stress on a region's land, water, and air resources.

The major social and economic impacts would be caused by the changes in the scale of crude petroleum refining activity. Changes are measured in employment, population, earnings, and income for subareas of the Gulf coast region. From these measurements, other social and economic effects were estimated. Overall, the social and economic impacts would be favorable.

Summary of Findings

(1) Development of deepwater ports along the Gulf coast to import foreign crude oil in large quantities is economically feasible.

(2) The no-action alternative has neither economic nor environmental advantage.

(3) The monobuoy system is the most economical and environmentally feasible facility investigated.

(4) A single-port system is the most desirable environmentally and the least desirable economically.

(5) A four-port system is least desirable environmentally.

(6) A two or three-port system is most desirable economically.

(7) Dispersion of import facilities would tend to maximize favorable social and economic impacts.

Pacific Coast

The West coast deepwater port study covered the coastal area between Bellingham, Washington, and San Diego, California. The consumption of petroleum on the West coast is projected to rise from two million barrels per day in 1970 to 3.4 million barrels per day in 1980 and 5.8 million barrels per day in 2000. In 1971, waterborne shipments of crude petroleum to the West coast were about 600,000 barrels per day. Projected future petroleum consumption would require waterborne shipments of crude petroleum to West coast ports of 2.2 million barrels per day by 1980 and 4.9 million barrels per day by 2000. Twenty-two potentially suitable deepwater port sites on the West coast were identified for review. Based on preliminary considerations of engineering factors, environmental concerns, transportation economics and expressions of local public attitudes, study emphasis was placed on six of the more logical sites: Ferndale, Washington, in Puget Sound; Central San Francisco Bay and approximately five miles offshore, south of the Golden Gate in Northern California; and about one and a half miles offshore at Point Fermin, Los Angeles Harbor and Long Beach Harbor in Southern California. These six sites, plus several of the apparently viable alternative sites (Anacortes, Everett, Tacoma, and Port Angeles, Washington; and Richmond, Moss Landing and Port Hueneme, Encina, California) were studied in detail.

At these fourteen potential sites, forty-one alternative port systems, including the "without" deepwater port case, were studied in a variety of facility configurations and combinations, considering various mixes of the tanker fleet. The evaluations were made under two sets of assumptions: (1) that the Trans-Alaska pipeline to Valdez would be built, and (2) that the pipeline would not be built.

Reduced ship traffic, long-haul distances from the Middle East and Indonesia, and the economies of scale in ship construction and operation all favor the use of larger tankers over the continued use of smaller vessels.

Assuming construction of the Alaska pipeline to Valdez, the study identifies three alternatives which would have the greatest potential economic value and cause the least change to existing conditions:

a. *Three deepwater ports.*—One deepwater port would be located in each of the Puget Sound, San Francisco Bay, and Los Angeles/Long Beach areas. Facilities would be provided for handling 210,000 d.w.t. tankers in Puget Sound and San Francisco Bay, and 325,000 d.w.t. vessels at Los Angeles/Long Beach.

b. *Two deepwater ports.*—One deepwater port would be in the San Francisco Bay area, capable of handling 210,000 d.w.t. tankers, and one in the Los Angeles/Long Beach area, capable of handling 325,000 d.w.t. Puget Sound would continue to receive crude oil at its existing ship terminals and through the Trans-Mountain pipeline.

c. *A single deepwater port.*—Deepwater port facilities would be provided at either San Francisco Bay or Los Angeles/Long Beach for tankers up to 475,000 d.w.t., with transshipment by sea in smaller vessels to other ports. Again, Puget Sound would receive oil through its existing facilities.

If the Trans-Alaska pipeline is not built, waterborne imports of crude petroleum may come partly from southern Alaska sources, but the bulk of the imports would have to come from the Middle East and Indonesia. There is the additional possibility that the North Slope oil would be moved through Canada and that Puget Sound refineries could tap this source by pipeline interconnection. This combination of possibilities indicates that there might be less incentive to develop major additional deepwater port facilities in Puget Sound.

Assuming that major additional facilities would not be needed in Puget Sound, the two most likely alternatives would be:

a. *Two deepwater ports.* One deepwater port located in each of the San Francisco Bay and the Los Angeles/Long Beach areas, with each port capable of accommodating 475,000 d.w.t. tankers.

b. *A single deepwater port.* A facility capable of accommodating 475,000 d.w.t. tankers could be located either in the Los Angeles/Long Beach area or in the San Francisco Bay area, with refineries in the other area served by transshipment from the deepwater port.

The Corps study evaluated all of the above alternatives including various possibilities for providing facilities both within existing harbors and through offshore monobuoy systems. Overland pipeline delivery up and down the West coast from a single deepwater port was also considered.

Expanded oil refinery operations could have adverse impacts on air quality conditions. These adverse effects are related to the amounts of petroleum processed and the environmental controls exercised. Developmnt of deepwater port facilities would not affect total refinery capacity but could alter refinery locations.

Marginal piers, used in inshore areas, are more adaptable to oil spill containment and clean-up procedures than are monobuoys used offshore. Nevertheless, monobuoys appear to present environmental advantages over marginal piers because they take oil tanker operations out of the biologically sensitive inshore areas where oil spills are likely to be more damaging.

In the Puget Sound area at Ferndale, facilities capable of accommodating the largest size tanker considered in the study could be built without any requirement for dredging. Monobuoy facilities, such as those suggested for Offshore Golden Gate and Offshore Point Fermin sites, could also be built without any requirement for dredging. Development of deepwater port facilities within San Francisco Bay, within Los Angeles Harbor, or within Long Beach Harbor would require dredging large volumes of material. Disposal of this dredged material could present environmental problems, particularly if the material is polluted.

Summary of Findings

(1) By or before 1980 there will be a great economic incentive to develop deepwater port facilities on the West coast capable of accommodating tankers in the size ranging from 210,000 d.w.t. to 475,000 d.w.t.

(2) If the Trans-Alaska pipeline is built, West coast deepwater port facilities would be expected to generate net savings in the cost of transporting crude petroleum from source ports to West coast ports of about $100 million to $160 million per year. These savings would be gained at a net yearly cost of about $10 million to $30 million.

(3) If the Trans-Alaska pipeline is not built, the major source of oil for future West coast needs would be the Middle East and total transportation costs would be higher. In this case, deepwater port facilities might generate net transportation cost savings as high as $200 million to $300 million per year, at a net annual cost of about $10 million to $30 million.

(4) Using a smaller number of larger tankers would reduce congestion in shipping lanes and decrease the probability of massive oil spills caused by collisions and groundings.

(5) The use of deepwater port facilities could reduce adverse environmental impacts on areas now used for oil transfer operations. However, adverse landside environmental impacts may be transferred from existing oil terminals to those areas where deepwater facilities would be located.

(6) Deepwater port facilities could have an adverse economic impact on existing port and harbor areas from which oil transfer operations would be diverted.

North Atlantic

The North Atlantic coast deepwater port study included the Atlantic coastal area between Eastport, Maine, and Hampton Roads, Virginia. The North Atlantic coastal region is a deficit fuel area and receives over half of the crude oil currently imported into the United States. In 1971, North Atlantic refineries processed 1.3 million barrels per day. Despite estimates that existing North Atlantic refineries can more than double their capacity at existing locations, new refineries will be required if the area is to meet projected demands. Daily imports and refinery capacity are expected to be about 2.0 million barrels per day in 1980 and 4.0 million barrels per day in 2000. These projections assume maximum expansion of refinery capacity at existing locations and little or no production of crude oil in this region.

Initially nineteen areas were selected for study and evaluation. These initial areas included seven sites along the Maine coast; two sites in Massachusetts—Massachusetts Bay and Vineyard Sound; East Passage—Narraganset Bay off Rhode Island; the entire port of New York area, including Montauk Point and Long Island Sound; the Raritan Bay and Sandy Hook region; the ocean off Long beach, New Jersey; sites in and just beyond Delaware Bay (including the Atlantic Ocean off Cape Henlopen); and several sites in Chesapeake Bay in the Norfolk area.

These sites were explored and evaluated in terms of construction costs, distance to major refineries and markets, economic impact on the region, and other indices of comparison. Those which failed to meet standards of economic feasibility were gradually eliminated, until only Raritan Bay, in lower New York Harbor; the Atlantic Ocean, off Long Branch, New Jersey; two sites within Delaware Bay, and two sites in the Atlantic Ocean, off Cape Henlopen, at the entrance to Delaware Bay remained. Indepth study of these sites was conducted to further consider their economic feasibility and the environmental and ecological ramifications.

Summary of Findings

(1) The projected quantities of crude oil to be imported into the North Atlantic region will come mostly from the Middle East and North Africa and will require the use of very large crude oil carriers (VLCC's) to service the refineries in this region.

(2) Economic considerations indicate that facilities to accommodate VLCC's serving existing North Atlantic refineries should be located along the reach of shore between New York Harbor and the Delaware Bay area. Maximum reduction in the effects of oil spills can be attained by construction of facilities offshore.

(3) Development of facilities to accept VLCC's in the North Atlantic Region is not desired by the affected states at this time. Fears of large oil spills affecting the recreational beaches of New Jersey and Delaware and of new large industrial complexes which would affect those recreational areas has caused local opposition to such facilities.

(4) Assuming the most likely projections of imported crude, the most efficient and economic method of accommodating VLCC's in the North Atlantic region would be to provide a regional monobuoy unloading facility approximately 13 miles off the New Jersey coast in the vicinity of Long Branch. If the low level projection of crude (no refinery expansion) is assumed, the most efficient and economic site would be located in Delaware Bay off Big Stone Beach. In all cases, the New Jersey and Delaware River refineries would be connected by pipeline to the offshore facilities.

General Summary

The Corps studies found that:

a. Most crude petroleum deepwater port alternatives studies show highly favorable economic benefit/cost ratios. However, hypothesized deepwater transshipment ports for handling dry bulk imports and exports appear (at least at present) economically unjustified.

b. The prospective justification for deep port facilities to accommodate petroleum supertankers varies considerably between regions. In the North Atlantic region, for example, such facilities could now be economically employed to service *existing* refining facilities. On the Gulf and Pacific coasts new deepwater facilities would be economically justified only if the volume of crude imports increases substantially.

c. By decreasing the number of operating ships, the chances of collision and groundings are reduced. The fewer ships will also reduce the number of transfer operations and the consequent risk of spills.

d. Unless carefully regulated, development of deep port facilities are likely to generate substantial expansion of refinery—petrochemical complexes. Some states seek such economic expansion. Others, especially in the Northeast, do not. Determination as to whether or not industrial expansion is desirable and where such expansion should take place can be resolved through coordinated land use planning.

e. The traditional method for accommodating large size ships, that is increasing channel depths through dredging, is generally not a viable alternative on the North Atlantic and Gulf coasts.

f. Private or non-Federal public ownership, financing and operation of deepwater port facilities is seen compatible with the public interest if accomplished under adequate and effective Federal control and regulation.

g. There is no presently foreseeable need for the Federal Government to undertake the major capital investments which would be required to bring deepwater port facilities, storage facilities and pipelines, into operation.

The three regional studies were completed as of 30 June 1973 and are now being reviewed by the Board of Engineers for Rivers and Harbors. The reports will be processed through the Office, Chief of Engineers to be coordinated with Federal and State agencies. After transmittal to the Office of the Secretary of Army and coordination with the Office of Management and Budget we hope that they could be submitted for consideration of the Congress later in this calendar year.

Question 5.—In relation to the completed A.D. Little Company survey of foreign deepwater port developments, did the Corps of Engineers assimilate and evaluate any data as to the legal, political, and institutional structures which each of these foreign countries developed to provide for the construction, operation, and regulation of their deepwater ports? If so, provide such information for the record.

Answer.—The Arthur D. Little study of "Foreign Deepwater Port Developments" developed considerable information on the legal, political, and institutional structures relating to the construction, operation, and regulation of deepwater ports in selected western European countries, Canada, Australia, Japan, and the Persian Gulf. For the convenience of the Committee, we have excerpted the relevant portions of the report, and include them as an attachment to this reply.

EXCERPTS FROM FOREIGN DEEP PORT DEVELOPMENTS, A SELECTIVE OVERVIEW OF ECONOMICS, ENGINEERING AND ENVIRONMENTAL FACTORS

(A Report Submitted to the U.S. Army Engineer Institute for Water Resources, by Arthur D. Little Inc., September 1971)

2. Conclusions

The situation and experiences reviewed in the course of this study constituted local solutions to site, country and time-oriented problems. Only general conclusions and recommendations are drawn from foreign port development experience and presented in the following paragraphs. Readers with interest in a specific area, who have a knowledge of the local port site conditions and the problems prevailing at the present time, may be able to draw more direct inferences for deep water port development possibilities from the material presented in this report and its appendices. However, the reader should be aware that foreign experience may not be completely applicable in the U.S. setting.

2.1 PORT MANAGEMENT AND GOVERNMENT INTERVENTION

In foreign countries, ports are managed by a wide variety of bodies, ranging from national and state authorities, to provincial and municipal bodies; they include company terminals and autonomous ports that cross municipal boundaries. Overall supervision of public ports is generally exercised by one or more ministries (eg., Transport or Equipment) which exert varying degress of control on coordination, finances and development planning. This is because foreign governments (particularly in Japan and France) have come to recognize the important role that efficient, modern ports play in furthering national, regional, economic development. However, as long as the coordination and planning functions are fulfilled, no particular management structure seems to show a clear superiority.

In foreign port development, a wide range of subsidies, both direct and indirect, are used to support infrastructure development; they may range from constructing and maintaining ship channels to acquiring land and reclaiming areas. As the development of expensive deep water terminals for use by a limited number of bulk-importing companies becomes more common, the ratio of government subsidies to total cost generally declined—the latter is the ratio commonly used in the United Kingdom.

Subsidy policies are also used selectively to encourage international trade or regional development. The concentrated monoport policy—used by the Netherlands to rebuild Rotterdam into its current world preeminence—is slowly being replaced by a multiport policy. More recently, environmental considerations, such as coastal and urban saturation, have begun to play a role in this process—more in Belgium, the Netherlands, the United Kingdom, and Japan than in France or Canada.

The interrelationships between individual ports, cities, and governments take several forms. We encountered a very flexible and effective structure in the North Sea countries, where formal and informal working groups bring together the various individuals and organizations concerned with long-range planning and development. The United Kingdom approach may be more thorough and comprehensive, but it has also led to more projects being abandoned rather than completed.

2.5 INTERRELATIONSHIPS AND POLICY IMPLICATIONS

All the countries visited consider the development of deep-water ports as a vital tool in their national economic policy (and, for the oil-importing countries, their energy policy) with far-reaching significance for formulating national and regional development strategies and bringing important industrial, political and, more recently, socio-environmental forces into play.

One must first recognize that a major bulk port needs:

A deep access for 250,000 dwt ships (from 65 foot to as much as 100 to 120 feet draft for major oil ports in the 1980's.)

Efficient ship and cargo-handling capability for short turn-around time and low accident risk;

Good links with major interior zones by pipeline, rail, and water for bulk shipment, and road and air for other cargo movement and secondary industry development; and

Large industrial land acreage with good load-bearing properties, for storage and transfer; such space requirements may cover anywhere from 20 to 50,000 acres for an integrated, urban-industrial complex.

The required investment and social impact are such that both government *and* private participation appear necessary, particularly since coastal land area is limited, and industrial, residential, and recreational activities tend to migrate to the seaside in most developed countries.

Accordingly, by and large, major port development policy decisions should be based on:

Good, long-range forecasts;
Clear national strategies;
Consideration of all possible location alternatives and natural sites;
A flexible, but definite regional master plan;
Planning an overall transporation system integration;
Compensation or reorientation of existing ports; and
Implementation of mechanisms ensuring participation of, and communications between, all parties concerned.

3. *Issues relevant to deep water ports*

3.1 FOREIGN PORT MANAGEMENT, FUNDING, AND PLANNING

The countries surveyed in this study have a wide range of port management bodies. Major public ports may be municipal ports, operated by city- or province-appointed managers or boards (North Sea ports), or autonomous ports operated under a ministry (France). Some major ports are grouped under a national or state authority (British Commonwealth). Private-industry ports are represented by Port Cartier, Canada and Bantry Bay, Ireland.

Port management patterns are also subject to change. For example, in 1950 Japan disbanded its National Port Authority and created "Port Management Bodies" which are provincial or municipal authorities. Britain, which offers a wide range of management practices, recently shelved a plan to assemble its major ports under a National Port Authority and is considering returning port administration powers to municipalities.

Whatever administrative practices may exist, foreign governments have recognized (to varying degrees) the national importance of operating efficient ports. This is particularly true in the highly competitive environment of northwest Europe. As a consequence, 100% national subsidies in channel maintenance, for example, are not uncommon, while infrastructure (channels and seawalls, basins, and raw land) developments often warrants 60% to 100% rates. The subsidy percentage tends to decrease as one follows the coast from France to the Netherlands. By contrast, United Kingdom ports must pay for their own maintenance, and receive only 20% national grants on infrastructure expenses.

The huge expenditures involved in developing ports for handling superships however, has given rise to second thoughts and foreign governments are becoming increasingly aware that while cheaper bulk raw materials benefit the nation's economy in the long run, it also primarily benefits the oil-refining and ore-processing companies. In Japan, therefore, a compromise has recently been reached between government and private companies, so that subsidies decrease progressively as channels are dredged to depths increasing from 40 to 53 feet. At 53 feet, for example, the cost is shared 10% by the national government, 10% by the (municipal or provincial) port management body, and 80% by industry. Port user charges have also risen in recent years, but the financial situation of almost all public ports remains generally tight. More generally, foreign governments have recognized the need for selectivity, and are using the subsidy to either encourage those ports which are a major factor in spurring foreign trade or in developing a depressed area. Japan and France thus employ well-graduated systems geared to meet these objectives.

Of course, such government intervention makes it more difficult to achieve better international cooperation, as seen in the competitive rivalry between Antwerp and Rotterdam—a situation which may be slowly moving toward a resolution. Government subsidy is not the only factor in maintaining a competitive posture. Quality of service remains a strong factor in international competition, as proven by Antwerp—which considers service a major asset in its competition with Rotterdam and Dunkirk.

In this context, the large expenses involved and their socio-economic impact have long made port planning a matter of government intervention. Again, Japan and France are foremost in this field: Japan sees a direct correlation between port traffic and GNP, and France believes that major integrated ports are the key to improve its development posture vis-a-vis its more concentrated industrial partners in the Common Market. But in all European countries surveyed, national and regional planning authorities are called upon to coordinate individual port planning. The individual authority has to fit its ambitions within the wider framework, but may influence decisions to a degree directly related to the port's economic importance. Rotterdam and Antwerp, for example, can summon powerful political pressure; in the case of Rotterdam, however, state and regional bodies have been increasingly reevaluating the past "monoport" policy concept. Although it played a substantial role in Rotterdam's reconstruction and emergence as the world's first port, saturation and polarization are introducing diseconomies. Also, there is a need to spread industrialization into depressed areas. (This also began to be recognized by Japan in the early 1960's).

In analyzing economic incentive and benefits of deep water ports, we have drawn heavily upon the development experience in northwest Europe, because countries in this region have mostly developed strategies of port development based on determining national economic returns. Japan is another outstanding example of a country with a well designed strategy, but its great many distinct geographical and economic features made it less suitable to be compared with the United States and to be studied in detail at this stage. Australia, Canada, and the ports of Bantry Bay and the Persian Gulf do offer rather specific lessons in the technical, environmental, and economic aspects of deep water port development, and these are detailed in the Appendices. But in the broader socio-political sense, the European nations' development more nearly parallels our own. At the same time, the European experience provides examples ranging from mature, heavily industrialized ports to new ports which are tied into regional development plans.

3.2.2 Port development strategy

It seems that a new stage in the development of port strategy is emerging in each of the countries considered. This is because port development has had such a pervasive influence on such things as plant location, urban concentration, and socio-environmental issues, particularly in the United Kingdom, the Netherlands, and Japan. Serious arguments are thus being raised about the feasibility and desirability of allowing ports to continue to expand and operate in the same way as in the past. This trend, of course, is accentuated by the increasing costliness of continued dredging, its environmental impact, and diversion of recreational coastal land and nearby urban centers to port development and industrial sprawl. Complete answers have not been found to these problems, but some general observations and lessons can be derived.

The French port development policy can still proceed without being unduly hampered by the constraints that face the already industrialized port complexes located in Belgium and the Netherlands. France is the only country in Europe which still has relatively large reserves of coastal lands with low population density. Therefore, the lessons the U.S. can derive from French port development experience are of a technical nature rather than of a socio-economic and environmental nature. Of course, if the U.S. chooses to closely examine the feasibility of creating a new port-industrial complex in a low-density urban and industrial area, the French experience would be very relevant.

The port-industrial complexes in Belgium and the Netherlands are more analogous to the present U.S. port situation. It is of interest to note that each of these countries is embroiled in raising comprehensive questions about the multitude and complexity of inter-relationships between port development and general economic, social and environmental development.

Japan ports, which are in a more advanced stage of saturation than European ports, provide important environmental lessons; they also illustrate to the utmost the importance of port development in an open, dynamic economy.

Specific lessons to be learned from European experience are:

(1) The central government plays a leading role in planning and in subsidizing port development. The approach is a long-term one (10–30 years) and involves regional planning that cuts across sub-regional boundaries.

(2) Planning for industry, especially land-usage in and around port facilities, is determined along with basic port policy. In fact, one of the most notable successes of the European port policy has been the parallel development of industry at port sites.

(3) Organizational coordination among local, regional, and national governments is provided by regional planning authorities.

(4) Semi-autonomous port administrations cross municipal boundaries for some large ports.

(5) The short-and-medium-term economic rationale is initially or ultimately the requirement for petroleum. The broader and more important economic rationale is the development of efficient coastal industrial complexes to compete in world and domestic markets.

(6) The Europeans have been, up to now, only slightly concerned with environmental management in its broadest sense, and more specifically, air, water, and solid waste pollution problems. But concern is growing in all areas.

3.2.5 National port decision making organization

The Netherlands provides a model for decision-making that could perhaps guide the U.S. in organizing to cope with the port question. The attached chart (Figure 3–1) portrays what might be called a government decision-making organization scheme which has been operating since 1968 in the Netherlands in matters dealing with port and canal development. The chart shows how the national government, the provinces, regional government, the community and the port authority first form a working group to provide a report to a subcommittee of the National Physical Planning Service. This report contains a description of physical planning requirements and cost estimates. A copy of the report is then provided to representatives of the National, Provincial, Regional, Community, and Harbor Authorities.

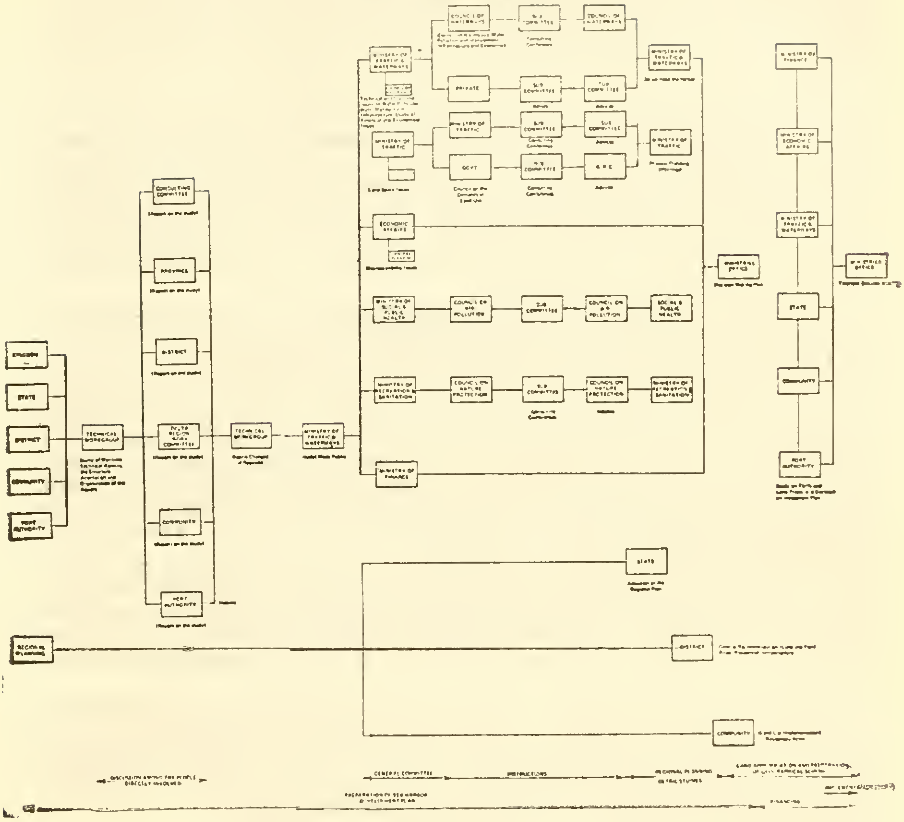
After all the various issues have been studied by these bodies, they report for review by other individual Ministries, such as the Ministry of Recreation and Sanitation, the Ministry of Public Health, Economics, National Planning and Finance. Subcommittees in these particular Ministries then examine the various issues as they relate particularly to their areas of interest, and submit recommendations and comments independently via the Cabinet. The Cabinet then gets together and discusses the matter, and finally submit a Cabinet report to the legislature concerning the finances of the development plan.

The objective of this planning approach is to provide as rational a decision-making process as is possible. Nevertheless, support for various plans requires considerable legislative backing and in this matter, politics, of course, also wields its influence. The deliberative process includes inputs from all groups at interest, so that by the time a "solution" emerges in the form of a particular development plan, it already enjoys broad support.

b. The importance of planning and communications

A deep water port cannot be planned and built in a vacuum. To be effective, the planning effort must get representatives of many and disparate interest

PORT AND CHANNEL DEVELOPMENT



groups involved at an early stage. Antwerp (Antwerp District) and Rotterdam (Rijnmond) provide excellent examples of how local planning authorities have involved various interest groups—labor, management, conservation, municipal authorities, and state authorities (representing various points of view) in their planning efforts.

While it is recognized that the fulcrum of activity and the catalyst to that activity is the port itself, a comprehensive planning effort must include, on both a short and long term basis, consideration of those areas which are either affected by or in themselves, directly affect the overall viability of the port. Such activities include:

Pollution abatement and control.
Local and regional infrastructure.
Port construction and maintenance.
Type, density and location of industry.
Type, density and location of housing and commercial areas.
Recreational and cultural facilities.

Beyond the region itself, consideration must also be given to the effect such a port will have on other communities, states or provinces outside the region and in an economic sense, even neighboring countries. Its fit with national policy considerations on matters such as energy, defense, regional economic development, and international trade must also be weighed.

Built into the development of a regional planning effort must be not only the aim of arriving at the best possible decision regarding a port project, but also the "selling" of the project *before* the decision can be achieved. The process of properly defining a question, and during that process arriving at a mutually agreeable decision by all parties concerned, is perhaps best exemplified in Japanese management practices. The following excerpts describing this process are from an article by Peter F. Drucker in the March-April 1971 issue of the Harvard Business Review ("What we Can Learn from Japanese Management").

". . . The Westerner and the Japanese mean something different when they talk of "making a decision." With us in the west, all the emphasis is on the *answer* to the question. Indeed, our books on decision making try to develop systematic approaches to giving an answer. To the Japanese, however, the important element in decision making is *defining the question.* The important and crucial steps are to decide whether there is a need for a decision and what the decision is about. And it is in this step that the Japanese aim at attaining "consensus". Indeed, it is this step that, to the Japanese, is the essence of the decision. The answer to the question (what the west considers *the* decision) follows its definition.

". . . Thus the whole process is focused on finding out what the decision is really about, not what the decision should be. Its result is a meeting of the minds that there is (or is not) a need for a chance in behavior.

". . . [The advantage of such a process] is that it makes for very effective decisions. While it takes much longer in Japan to reach a decision than it takes in the west, from that point on they do better than we do. After making a decision, we in the west must spend much time "selling" it and getting people to act on it . . . The Japanese by contrast spend absolutely no time on "selling" the decision. Everybody has been pre-sold [or is reasonably comfortable with the decision and that their interests will be considered]. Also, the process makes it clear where in the organization the answer to a question will be welcomed and where it will be resisted.

". . . To the Japanese, the most important step is understanding the alternatives available. They discipline themselves not to commit themselves to a recommendation until they have fully defined the question and use the process of obtaining consensus to bring out the full range of alternatives. As a result, they are far less likely to become prisoners of their preconceived answers than we are."

A specific example of what should be done to improve on past experience pertains to relocation of small communities surrounded by industrially zoned acreages. The counsel of Berendrecht and Zandvliet, near Antwerp, would now prefer to relocate its clients in an area similar to their original environment. Prototype housing should be built there and presented to the menaced community, and assistance lent in managing compensation monies.

European Port Development Strategy

4.1.4 Government action

a. Government response to port development

The increase of scale in both maritime vessels and port equipment has forced new requirements on port authorities. However, the most important factor affecting the organization of ports has been the industrial development springing up around the ports.

Very astutely, the national governments in France, Belgium, and The Netherlands have placed port development at the center of broad national, social, and economic development programs. Within these broader developmental programs, the European central governments provide the structural elements of the framework and instrumentalities necessary to spur port development. These are: long-range planning guidelines, semi-autonomous port administrations, port investment subsidies (amounting anywhere from 30–80% of cost), construction of expanded inland transportation and communication networks, and, most importantly, the creation of regional planning authorities whose purpose is to spread the benefits arising from port development to the regional population, and provide planning for industrial, social, and environmental balance in particular regional zones.

b. Financial inducements

One important aspect of the seaport operation relates to the provision of national subsidiaries supporting the transportation function and to the national financial inducements provided for industrial location.

It is argued that all major industrial developments that have occurred on the west coast of Europe have been the result of appreciable inducements. There does appear the necessity to provide better financial inducements to locating companies until a "critical mass" of port based industry is established. Nevertheless, the locating private enterprise is concerned with the overall economics of location; an available subsidy is only one of a number of locational factors considered.

Firm facts regarding financial inducements are not readily available. The available financial assistance varies from country to country and from port to port. Table 4–7 compares the financial inducements obtainable for foreign investors in four West European nations. Belgium favors the foreign against the national investor; the Netherlands and West Germany generally treat all investors similarly, irrespective of nationality; the attitude of France is more ambivalent.

c. *Intergovernmental cooperation*

In Brussels, Common Market officials believe that member countries are not interested in bringing port development matters under the jurisdiction of the Common Market authority. At the moment, the countries are still very much divided on even integrating railroad development policies and rate structures. As long as these issues are not resolved, a common port policy is unlikely to evolve.

France needs at least eight to ten years in order to bring its ports and heavy industries up to a par with the northern European countries. Consequently, France will be hesitant to agree to any Common Market harmonization for transport and port policies. The basic principles of a Common Market transport policy exist on paper and to some degree have been accepted in principle by the European Economic Community (EEC) members; however, the crucial details have yet to be agreed upon. The main principle to which the member governments have agreed is that competition between all transport links—water, air, road, rail, and pipeline—should be as fair as possible. Naturally, each national Government has its own opinion on what is possible and its own definition of "fair".

TABLE 4–7.—FINANCIAL INDUCEMENTS FOR NEW INDUSTRIAL INVESTMENTS 1970

Country	Attitude to foreign investments	Capital incentives	Capital restrictions	Special tax allowances
France	Ambivalent, no special considerations, regional incentives informal.	Subsidies up to 25 percent of investment in fixed assets, low interest loans, land price reductions.	Not on earnings or disinvestment but on ownership.	Extraordinary depreciation rate of 25 percent of investments in some areas, property exemption, reduced license tax, local tax allowances 50–100 percent, for up to 5 years.
Belgium	Favorable, special considerations, formal program regional incentives.	Formal subsidies [1] on fixed assets (20 percent), materials (7.5 percent) and on interests.	None [2]	Depreciation rate double normal for 3 years, property and registration exemption 10 years, local tax allowances vary, no tax on regional subsidies.
The Netherlands	Neutral, no special considerations, formal program regional incentives	Reduced interest advances with loan guarantees, formal subsidies up to 35 percent of capital invested.	None	Accelerated depreciation rates on one-third of fixed assets except in West of country.
West Germany	Neutral, no special considerations, formal program regional incentives.	Loan guarantees with reduced interest loans, up to 15 percent subsidy of investment.	None [3]	Depreciation rate 50 percent in the first year on equipment and 30 percent on buildings for 3 years.

[1] Relating to regional incentives.

[2] Essentially none but administrative procedures tend to introduce minimal restraints.

[3] Except in regard to natural resources.

The Treaty of Rome, which created the Common Market in 1958, established as one of its guiding principles that governments should not aid their own industries to the detriment of other member nations' industries. Consequently, one of the significant problems which the EEC Transport Commission is attempting to face is to ensure that each mode of transport pays the economic costs of the transport infrastructure it uses. The EEC Transport Commission therefore argues that it is necessary to examine the ports and the way they are financed to ensure that no one method of transportation is artificially aided by national subsidies to ports. This claim by the EEC Transport Commission has been challenged by several members, since Article #84 of the Treaty of Rome specifically excluded from Common Market jurisdiction transport to and from places outside the Common Market (which is the transport function provided by ports). The present state of interport competition is, if anything, likely to increase in the future because of French implementation of a major national port policy in which investments will be funded up to 80% by the national government.

4.1.5 Outlook

As developments are now proceeding, and if all the countries strive to realize their long-term port development plans, it looks as though there may well be some over-capacity in European ports by the end of the decade and into the 1980's. A certain specialization of ports and coordination of investment plans seems to be required to prevent costly mistakes in investment allocation. The disadvantages of a non-coordinated investment policy are:

Individual industry and regional over-capacity; and
Distortion of production by subsidies.

This last situation is created when some types of activity derive considerable benefits from infrastructural improvements without any contribution to the social costs.

The policy of port development cannot be separated from regional policy, because a port exerts considerable influence on the economic structure of the region. A wider scope is needed to change an investment policy from one which is oriented to increased port traffic to one which involves growth of all functions both portuary and regional.

Without supplementary regional development measures, the construction or expansion of a port will probably not induce a major industrialization program in an undeveloped area. However, for areas that want to have basic industries, a well-equipped port in the area itself is an important part of a development strategy. For the location of processing industries, port construction is of less importance if a good transport infrastructure network with neighboring ports exists.

4.2 FRENCH STRATEGY

4.2.1 The role of the central government

In France, port development plays a significant stimulative role in the industrial development strategy of the Sixth Five-Year Plan (1971–1976). An appraisal of the structure of the French National Economy indicates that France is as industrially oriented as other European countries (see Table 4–8, Row 1); manufacturing contributes approximately 35% to the Gross Domestic Product in France, 39% in Germany, 31% in The Netherlands, and 30% in Belgium. But the vast majority of firms in French industry are very small family businesses, which have acted as a steady drag on the growth of the manufacturing sector (see Table 4–9). This drag effect is cleary evident in the manufacturing sector, where the historical (1958–1969) growth rate of 5.5% is the lowest of all Common Market[1] countries (see Table 4–10, Row 10).

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[1] In 1971, the Common Market (EEC) included France, Belgium/Luxembourg, The Netherlands, Germany and Italy.

TABLE 4-8.—NATIONAL GROSS DOMESTIC PRODUCT STRUCTURE

	France	Belgium	Netherlands	Germany	Italy	U.K.	U.S.A.
	1969 percent						
1. Manufacturing	34.7	30.4	30.7	39.2	27.3	34.6	28.1
2. Agriculture	6.6	5.5	7.4	4.3	11.0	3.1	2.9
3. Construction	10.2	6.6	7.9	6.8	8.0	6.8	4.5
4. Mining	.9	1.7	1.6	1.8	.7	1.8	1.6
5. Utilities	1.9	2.2	2.1	2.0	2.6	3.6	2.3
6. Commercial	36.8	46.4	41.8	36.4	38.5	43.0	46.5
7. Government	8.9	7.2	8.5	9.5	11.9	7.1	14.1
8 Gross domestic product	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Billions of dollars (current 1969)						
9. Manufacturing	$44.9	$6.1	$7.0	$63.7	$19.9	$32.8	$265.0
10. Agriculture	8.6	1.1	1.7	7.0	8.0	2.9	27.4
11. Construction	13.2	1.3	1.8	11.1	5.8	6.5	42.4
12. Mining	1.2	.3	.4	2.9	.5	1.7	15.1
13. Utilities	2.5	.4	.5	3.3	1.9	3.4	21.7
14. Commercial	47.7	9.4	9.5	59.2	28.0	40.8	438.5
15. Government	11.4	1.5	1.9	15.3	8.7	6.7	133.0
16. Gross domestic product	129.5	20.1	22.8	162.5	72.8	94.8	943.0

Source.—Organization for Economic Cooperation and Development and Arthur D. Little, Inc.

TABLE 4-9.—SIZE OF FIRMS IN FRENCH INDUSTRY—1966

Workers employed [1]	Number of firms
0	284,854
1 to 9	329,265
10 to 199	69,651
200 to 999	3,830
Over 1,000	638

[1] Excluding employer.

Source.—Bulletin Mensuel de Statistique Industrielle, 1970.

TABLE 4—10.—PRODUCTION OF EEC MANUFACTURING INDUSTRIES

	France			Belgium			Netherlands			Germany			Italy		
	a [1]	b [2]	c [3]	a [1]	b [2]	c [3]	a [1]	b [2]	c [3]	a [1]	b [2]	c [3]	a [1]	b [2]	c [3]
(1) Chemicals, petroleum	$8.9	19.8	8.7	$1.1	18.0	8.3	$1.5	21.4	8.2	$10.0	15.8	10.3	$4.5	22.6	13.7
(2) Basic metals	2.5	5.6	5.6	.6	9.8	5.9	.4	5.7	10.7	6.0	9.4	4.3	1.3	6.5	9.9
(3) Metal products	13.3	29.6	5.2	.7	11.5	8.7	1.8	25.7	7.2	21.5	33.8	7.2	4.3	21.7	9.1
(4) Non-metallic minerals	1.8	4.0	9.1	.4	6.6	5.8	.3	4.3	7.0	3.5	5.5	6.0	1.0	5.0	7.9
(5) Wood, paper, publishing	3.9	8.7	5.4	.7	11.5	7.6	.8	11.4	8.6	5.5	8.6	4.5	1.5	7.5	6.9
(6) Textiles	2.0	4.5	2.7	.4	6.6	4.2	.2	2.9	3.0	2.7	4.2	2.6	1.1	5.5	5.5
(7) Clothing, footwear	2.4	5.3	3.9	.3	4.9	5.0	.2	2.9	3.1	3.0	4.7	3.6	.8	4.0	8.2
(8) Foodstuffs, beverages, tobacco	6.1	13.6	2.9	1.1	18.0	3.3	1.0	14.3	3.5	8.1	12.7	5.4	2.5	12.6	5.7
(9) Miscellaneous	4.0	8.9	5.2	.8	13.1	6.7	.8	11.4	--------	3.4	5.3	--------	2.9	14.6	4.5
(10) Total	$44.9	100.0	5.5	$6.1	100.0	6.3	$7.0	100.0	7.0	$63.7	100.0	6.3	$19.9	100.0	8.4

[1] Dollar value of production in 1969 (billions).
[2] Structure in 1969 (percent).
[3] Average annual growth rate from 1958–1969 (estimated).

Source.—Statistical Office of the European Community and Arthur D. Little, Inc.

In order to maintain its political influence within the Common Market after the next decade, the French Government believes it must concentrate its resources on developing the industrial sector by reorganizing the structure of older industries, and by increasing the scale of operations in new dynamic industries so as to become competitive in the Common Market and international markets. Timing is also a critical element. The consensus is that France only has between eight and ten years to accomplish its goals before Common Market integration will virtually nullify many of France's commercial trade barriers and freeze its industrial posture vis-a-vis other Common Market nations.

French Port Development Policy is not only an instrument shaped by France's desire to maintain and increase its political and economic influence in the European Continent, but it is also shaped by important domestic considerations. French industry and population are overly concentrated in the Greater Paris Basin (with a population of approximately 12.5 million or 25% of the national total). The national rural-to-urban migration pattern has centered upon Paris for the past two decades. If this population flow is not checked, serious social congestion could result in the Paris urban center. To the West, on the Atlantic Coast, and in the South, on the Mediterranean, population and industry are scarce and land is relatively abundant. The port and industrial development schemes are viewed as stimulants to the growth of coastal urban complexes which will counterbalance the economic weight of the capital and, thus, reverse the migratory pattern.

4.2.2 The French rationale for port development

During the beginning years of the planning for the new generation of ports, the basic underlying rationale was that harbor and port development could act as a major attraction pole for industrialization. A number of economic factors support this view:

First, transportation costs of raw materials are a large component of total manufacturing costs in heavy industry;

Second, the present and future revolution in maritime vessel size and handling techniques promises to significantly reduce this cost component while changing the pattern and increasing the volume of international trade;

Third, wage levels in Europe are rapidly approaching normalization because of the unions (and it is conceivable that European wage levels within a decade or two will be very close to those in the United States and Canada); consequently, reductions in transportation costs will add to the competitive posture of French industry;

Fourth, French ports lend themselves to major deep water port development projects;

Fifth, development of modern ports would combat the drainage of northern French trade through ports in Belgium and The Netherlands;

Sixth, there is an increasing tendency among industrial firms to move to coastal zones;

Seventh, industries which do not presently require major seaport facilities want to be near port complexes because they feel that within ten years their products and operations may require such facilities;

Eighth, France is the only Common Market country that can easily spare land for the giant spread of coastal oil, petrochemical, chemical, and steel plants without encroaching seriously on its reserves of open countryside.

a. Selection of ports

Beginning in 1965, the French government took a major step towards increased national control of the major French ports by the creation of six Ports Autonomes (autonomous ports). Before the autonomous ports were created, the ports were administered by the Chambers of Commerce of the cities. The ports which were selected were Marseilles Fos on the Mediterranean and Bordeaux,[2] Nantes-St. Nazaire, Rouen, Le Havre[2] and Dunkirk on the Atlantic.

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[2] Bordeaux and Le Havre were autonomous maritime ports before the 1965 government port reform legislation.

The reasoning behind the selection of certain ports to become deep water ports was based on the following requirement factors:

Nautical characteristics—the port must be capable of being developed into a deep water port able to receive 800,000—1,000,000 dwt crude oil carriers at a realistic economic cost;

Large acreages of land must be available—heavy industrialization is the economic justification for state subsidies in port development;

The port must be tied to a close hinterland—not be isolated;

The port must have demonstrated a viable growth in traffic over the past ten years.

It soon became apparent that financial resources were not available to develop all these ports for heavy industrialization, nor was the time available to do so and also reach the objectives in the Sixth Plan. Because of limited economic resources, in order to achieve the national objectives, it became necessary to concentrate the national investment in only a few ports in order to reach the "critical mass" necessary for large-scale industrialization and to reach the stage of private entrepreneurial industrialization (i.e., critical mass) which is typified by Rotterdam. Consequently, three ports were selected for high priority, which basically means that they will obtain two-thirds of the $2 billion total port development expenditure during the next five years of the Sixth Plan. These ports are: Marseilles/Fos, Le Havre, and Dunkirk.

In the past, the historical stimulator for port development has been the port users who were continually ahead of the port authorities in requesting improvements and expansion. The French government, however, is planning to make a quantum jump in harbor and port facilities in order to take vessels which are somewhat larger than those which are presently in the operational and constructional stages.

b. French port investment policy

Under the new French port plan, the national government increased its share of expenditures on infrastructure or major installations, such as the building of locks, jetties, fairways, and channels from 50 to 80%. (See Table 4–11). For lesser infrastructure work, such as superstructure improvements and secondary works (i.e., lengthening or extending existing quays), the financial division is 60% from the State and 40% from the autonomous port, rather than the previous 50–50 division. The State finances all maintenance requirements in the port, while the Port Autonome must finance all dock-side installations and equipment out of wharfage revenues. The port finances its day-to-day operations from a combination of land and equipment rentals. In regard to capital investment for superstructure work, it relies on a port tax which can be used for collateral for long-term bonds with the maximum borrowing capacity limited by the French government. Each autonomous port will retain control of its day-to-day operations and also have responsibility for providing port planning proposals to the central government for the future development of the port. In order to obtain private enterprise commitment in the port development programs, the government will share the investment costs involved in constructing the proposed artificial islands at Le Havre and Dunkirk. Investment costs are anticipated to be split 15% government and 85% private enterprise or 20–80.

TABLE 4-11.—FRENCH AUTONOMOUS MARITIME PORTS' SOURCES OF FINANCIAL EXPENDITURE

Expenditure	Previously			Presently		
	State		Ports	State		Autonomous ports
Infrastructure	50	+	50	80	+	20
Superstructure	50	+	50	60	+	40
Maintenance	50	+	50	10	+	--
Equipment	--	+	100	--	+	100

c. Role of local government (city, province) in port development

Neither the city nor the provincial governments play a leading role in France's port development scheme. On the contrary, the creation of autonomous ports was implemented in order to centralize control and direction in the central government. The development of the port projects and the associated heavy industrial zones are considered too important to the future economic structure of France to be left in the hands of local authorities.

The French government has established regional planning authorities (OREAM) whose function is to properly integrate and distribute the economic and social benefits resulting from the port development to the region in which the port is based. Thus, the port, surrounding communities, and the province cooperate and coordinate their activities and plans with this regional planning authority. The port cities do not collect taxes from the autonomous ports nor do they provide investment funds to the port. However, they do invest in social infrastructure such as hospitals, schools, etc., which will be needed as the industrialization progresses.

4.2.3 French regional planning

DATAR (Commission For Land Use And Regional Development Planning) was created in 1963 to promote de-centralization and orderly, concerted regional development. It had to deal especially with urban development, industrial development, and communications, and came quickly to expand the concept of development based on large existing cities. It concentrated first on the "under-developed" western half of France, the decaying (coal, textiles) northern region of France, and finally defined 8 large metropolises: Lillie-Dunkirk, Basse-Seine (Le Havre-Rouen-Caen), Nantes-St. Nazaire, Bordeaux-Toulouse, Marseilles, Lyon, Metz-Nancy, and Paris. These cities form the nuclei in their respective urban areas.

In each region, "OREAM" Regional Planning Teams (multidisciplinary) composed of architects, urban specialists, sociologists, economists, and industry and transport specialists evolved a framework for concerted development (1985–2000) called SCHEMA D'AMENAGEMENT. On the average, 3–4 years and $2 million have been necessary for each regional study. The studies have aimed essentially at ensuring coherent development and identifying problems, particularly covering urban centers and new town development (le Vaudreuil, Basse Seine), industrial zoning, nature conservation (green belt zones), communications (air, road, rail, water) and telecommunications.

DATAR supports the OREAM studies (1985–2000 plan), coordinates these studies for national industrial objectives, and defines actions and objectives by priority. The regions make their 5-year plans, called Esquisses Regionales or Regional Drafts, which shuttle back and forth to Commissariat au Plan (Planning Commission) until merged into the 5-year plan. Once approved, technical solutions are developed by the regions.

There has been some attempt to quantify the attractiveness of specific industries for specific needs and to build the ideal profile for a given area but in fact, the planning authorities will take any industry as long as it is located away from Paris.

Where the government has provided the basic infrastructures (deepwater ports), there are only traditional incentive measures (such as low-interest loans to 60% of plant investment for steel plants, but nothing for petrochemicals). In exchange for its infrastructure contribution, the government allows only major and basic industry to locate in deep-water ports. In Dunkirk, Pechiney-Kaiser received an outright subsidy of 200 million francs ($40 million), an "equalization" subsidy to allow a French location rather than Dutch. This represented one-half of the total 400 million francs: $80 million) national subsidy budget for 1970.

In Bordeaux, Nantes-St. Nazaire, Brest, and Cherbourg (i.e., ports that have not been earmarked for major state-supported development), DATAR will arrange for the following incentives (established for the "under-developed west"):

25% investment loan without interest to industry to be reimbursed at the rate of depreciation along with taxes;

Special depreciation methods: 25% of fixed structures and building investment can be depreciated in one year to take into account loss of value on resale in undesirable location;

Reduced price for industrial land (including utilities) with DATAR paying up to ½ and sometimes ⅔ of the price;

Exemption period from local tax; and

Grants for professional training of local people.

4.2.4 The aims of the three French priority port developments

The development of a major deepwater port at Dunkirk is aimed not only at the development of heavy industrialization in the Dunkirk zone (steel, alumina, oil, petrochemicals) but to reverse the economic stagnation of northwestern France which is based on the declining textile and coal mining industries. In addition, the port planners in Paris view the Dunkirk development as opening up a new supplyline or "breathing lung" to the heavy industrial areas of Germany.

Le Havre is viewed as that port development project with the least amount of risk. It has a massive hinterland based upon the Paris urban complex. The planners foresee the entire Seine River Basin between Le Havre and Paris as being industrialized by the year 2000.

Port development at the Marseilles/Fos area is viewed as that program with the most risk of the three-port development priority projects. The hinterland for Marseilles extends up the Rhone Valley all the way to Southern Germany. Although the hinterland covers an extensive area, it is comparatively light in population and industry. Marseilles/Fos ranks as second in port development priorities (Le Havre being #1 from a national view). Not only is the Marseilles/Fos area close to Algerian and Libyan crude sources, but segments of the port area are adaptable to harbor deepening. It is possible to take larger and larger supertankers by extending the jetty in incremental steps further into the Mediterranean. This option allows the port a great deal of flexibility in that it does not have to immediately go to facilities to take the largest envisioned tankers (such as the Le Havre port development project). At the present time, the jetties are being lengthened to accommodate 350,000 dwt tankers and are scheduled for completion in 1973. The next phase regarding jetty expansion has not been decided.

The planners visualize that after approximately ten years, an extensive heavy industrial complex will exist at the three ports. They then visualize subsidiary industries growing upstream from the big coastal steel and petrochemical plant complexes along the main road, rail, and waterways, stretching inland from the three key ports. They believe that this structural pattern of urbanization and industrialization is particularly suited to France which has grown on a star-shaped pattern around Paris, ever since Louis XIV, but with very little development until now at its western and southern boundaries.

4.3 DUTCH STRATEGY

4.3.1 The changing significance of the gateway ports

a. The European industrial pole

If one looks closely at the Europtan industrial pole, it is striking that this pole is primarily concentrated in the northwest corner of Europe. This was not coincidence, as this location was the most favorable one for industrial concentrations. Along the large north German low-lying plain, coal and iron ore deposits were discovered which set off the industrial revolution in the 19th century.

In Europe, the circumstances were such that the growing industrial center had excellent outlets to the North Sea via the big rivers flowing through the North German Plain in a northwesterly direction. To the south, the Alps formed an obvious traffic barrier. This situation resulted in the Delta ports—the harbors situated in the area intersected by the rivers Scheldt, Rhine and Meuse, namely the ports of Antwerp, Rotterdam and Amsterdam—becoming the gateways for the industrial pole area. These ports have attracted a transport flow whose origin or destination is found in the industrialized hinterland. Historically, this transport flow has been created and sustained by hinterland industry.

After World War II, many new industries established themselves around the old industrial center, with the new industrial areas expanding mainly in a southerly and westerly direction. This development of the old industrial nucleus into a larger industrial area was largely stimulated by the substitution of oil for coal as a source of energy. In addition, the petrochemical industry based on oil and the resulting related chemical industries were also established in the seaports, where the crude oil was transshipped. As a result, the ports also experienced heavy industrial development. A belt of modern process industries of an entirely new nature sprang up in the North Sea ports.

The industrial spread to the south has occurred as a result of the fact that petroleum pipelines managed to break through the Alps. This enabled an entirely new industrial complex to be developed in Southern Germany, which was formerly considered geoeconomically impossible.

This is the situation which developed in the 19th and mid-20th century. The Netherlands, and especially Rotterdam, assumed an extremely central position in the hinterland transport flows which enabled the Dutch transport firms, the ports, and the new port industries established there, to develop strongly.

b. Trends of change

The historical developments outlined above are the basis for The Netherlands' economic prosperity. But modern developments have caused change.

One change already pointed out was the fact that the oil pipelines have overcome the Alps barrier. This has created a southerly oil network which supplies the Southern Rhine Valley, the Rhone area, and Southern Germany with oil from Marseilles, Genoa and Trieste. As a result, entirely new industrial areas have emerged in southern Germany, a development which will continue. The question now is, to which ports will these new industrial areas turn in the future: to the traditional northerly situated ports on the North Sea (i.e., Antwerp, Rotterdam, Amsterdam), or to the French ports on the Atlantic, or the Mediterranean? The development means that the transport flow is showing a definite trend to move towards the south. This trend could be boosted if oil from the Sahara were brought to Southern Europe via a pipeline under the Mediterranean, thereby cutting out part of the sea transport by crude carriers. The French plans to develop Le Havre, Fos and Dunkirk into major petroleum-receiving ports could well become a reality if there were a major accident involving several large oil tankers in the congested North Sea. Such an accident could result in the Dover Strait being forbidden to large tankers, thereby forcing Rotterdam-bound tankers to reroute around the Scottish Peninsula. In this event, Le Havre and Dunkirk might become a major alternative to Rotterdam by serving the European hinterland by new pipelines.

The new capacities of the French Atlantic and Mediterranean ports, if they have at their disposal improved inland connections comparable to those inland connections enjoyed by Rotterdam, will have a major impact on the Netherlands. In this respect, the French plans for the improved canal on the Rhone and the connections from it to the Rhine and Meuse are of major importance. An expanded Rhine/Rhone canal connection could perhaps direct a major portion of the entire southerly situated industrial area towards the French ports situated in the south. This also applies to the canal which Dunkirk is constructing to the northern French hinterland and a planned crude oil pipeline from Le Havres through the French industrial center to the Ruhr and the southern German industrial area.

This entire phenomenon, the shifting or southerly expansion of industrial areas and the accompanying trend of changing transport flows in a more southerly direction,[3] means that the Netherlands finds itself situated on the northern edge of the industrial center of Europe with the risk of being somewhat isolated. This development could be intensified if the ports situated in the South—and these include Dunkirk and Le Havre—were also to have important container terminal facilities at their disposal. If these container terminals were linked by rapid railway connections with the industrial hinterland on the Continent and with the United Kingdom, part of the general cargo flow which now goes via Rotterdam and the other Delta ports could be diverted toward the south.

Port officials pointed out that the transport policy of France and Germany is concentrated more on railways than that of the Netherlands; therefore, container traffic via the French ports could easily be favored. The potential of transferring the general cargo flow to rail transport will be given an important stimulus if, as is expected, a Channel Tunnel is opened. In that case, the British industrial area would have a direct link via container trains with the industrial areas in Northern France, Belgium and the Ruhr. The British transport policy also strongly favors the railways, therefore there is a very real diversionary possibility away from the Netherlands.

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[3] Such a shift is not yet statistically noticeable but such a trend will show up during the next few years.

4.3.2 *The world's leading port: Rotterdam*

The transport and port functions must be considered as being of eminent importance for the Netherlands' prosperity. Under the "Mono-port concept," Rotterdam convinced the central Government that there could only be one major port in the nation and that all national efforts should be focused on this port in order to obtain the maximum economics of scale. This concept which originated at the end of World War II was quite logical. The hinterland of the Netherlands (i.e., Germany) was in ruin. The Netherlands at this point in time was faced with a dilemma. How were they going to reconstruct their nation and develop a viable economy which historically had been based upon the transport service function provided for Germany? The answer became heavy industrialization within The Netherlands coupled with a specific industrial focus on the ports themselves. Because of financial limitations of the nation during this period of time and even extending into the late 1950's, it was mandatory that development resources be concentrated in the area having the greatest number of natural advantages. This became Rotterdam.

Whereas historically the transport flow was a function of the industry in the hinterland, Rotterdam now believes that, if the transport flow is to be retained and grow in the interest of her prosperity, then industrialization and port development must continue to take place in the Delta area. This is one of the fundamental reasons why Rotterdam's port strategy has been to expand industrialization in the Rotterdam area; it is the only way the transport flow can be tied to the port. The construction of improved deep-water harbors alone without any industry is not viewed as the answer, because the diversionary tendencies will be too strong and will make themselves felt in the next decade. However, the question of whether 500,000 dwt tankers could berth at Rotterdam is still unanswered because it would require additional dredging and possibly a dredging of part of the English Channel. Alternatives are a possible rerouting of such large tankers around the Scottish Peninsula, or a redesigning of supertanker hulls so that they would have smaller drafts.

From a national viewpoint, a unique and highly successful port and associated industrial complex has been created. The question now is: Has the strategy outlived its usefulness? Rotterdam, if it continues to expand at the rate that it has in the last decade, will at some point in the near future reach a stage where dis-economies will occur in the present port and urban structures. To leap-frog this port obstacle, Rotterdam suggested the southerly expansion of the Maasvlakte I project or the creation of completely new port facilities in the southern delta. Such a scheme, obviously would promote further industrialization but it would also result in eventual devastation of a major portion of the delta lands.

a. Conflicts over future development

Rotterdam, the world's largest port, is presently in disagreement with the central government at The Hague over two important aspects of Rotterdam's future development: (1) the central government's unwillingness to grant larger subsidies to the Port of Rotterdam, and (2) the need for new deep-water sites during the remaining decades of this century.

There are, of course, various opinions within either camp. Of the five major Government departments concerned with the port and its finances, Transport and Waterways and Economic Affairs do not view port development from exactly the same angle as the Treasury and the Home Office, which are jointly responsible for the bulk of governmental finance, or Housing and Regional Planning, which is doing its best to spread an overcrowded Rotterdam population and its industry over as many regions as possible. In Rotterdam itsellf, the Port Authority has shown itself to be more land hungry than various influential civic leaders deem necessary.

The desire for more Government aid in the fight against the increasing competition by other European ports—notably Antwerp, the French ports and several British ports—is widely shared among port planning personnel in Rotterdam. This is a recent development, which seems to have been stimulated largely by the French port development program.

b. The subsidy problem

If no other European Government subsidized its ports, so the argument in Rotterdam runs, there would be no need for Rotterdam to ask for aid. But Rotterdam cannot finance all its investments out of the various port dues any more. These dues are being kept within narrow limits by foreign competition, and competitor ports are able to keep their dues low precisely because they are being subsidized.

Rotterdam distinguishes three major elements in the subsidy problem: (1) The cost of the infrasturcutre, from original site costs through dock basins to quays and roads; (2) the cost of superstructure facilities such as cranes and warehouses; and (3) the cost of maintaining the waterborne connection between the port and the sea. The Municipality of Rotterdam covers all the above costs, with the following exceptions: the State covers two-thirds of the cost of harbor dikes; private enterprise covers the investments for superstructure.

Several years ago, when the State approved the city's plan to dredge a seven-mile, $240 million high-sea channel and dike for the Maasvlakte I project, in order to open the port to ships of up to 250,000 dwt, it was generally assumed that the State would pay two-thirds of this sum. The subsequent announcement that the municipality woulld have to bear the entire cost of the channel dike—prompted by the central government's severe budgetary problems and supported by the argument that the advantages of the project would accrue primarily to the operators of the 250,000 dwt vessels, notably the oil companies—came as a considerable shock to Rotterdam.

Officials in The Hague were quick to point to one significant "built in" advantage enjoyed by Rotterdam: its geographic situation. But even they admit that this is being slowly modified by pipelines, which have already given such ports as Marseilles, Genoa, and Trieste the kind of access to the heart of Western Europe which the Rhine used to give only to Rotterdam.

c. *The expansion problem*

The supertanker revolution also plays an important part in the other major area of contention between Rotterdam and The Hague. Reduced to its essentials, this centers on the question of what deliberate limits, if any, shall be set to Rotterdam's further expansion as a port and an industrial center.

The natural coastline ceased to be a boundary some time ago: nearly 6,500 acres of shallow sea off the coast, known as the Maasvlakte I, which will yield 4,025 acres of net usable space for port handling facilities and industrial sites, is now being turned into dry land surrounding several huge dock basins. By common consent this area, which should be completed in the early 1970's (presently 50–60 percent completed), will be reserved for enterprises which must have deep-water access, such as transshipment companies for bulk goods and industries such as refining and possibly a steel plant (although the steel plant proposal is facing stiff environmental opposition).

The Rotterdam authorities believe that all the available space in the Maasvlakte I will have been reserved by companies when the project is completed. Rotterdam is also convinced that the demand for sites on or near deep water will not be stilled by then. A special problem is being posed by enterprises which could theoretically be sited further inland but which insist on a place near the deep-water industries or near a big industrial center. Obvious examples can be found among the producers of the more specialized petrochemicals, who want to be near the refineries, and major chemical plants, who want to save transportation costs.

Sites in the Rotterdam area are already so scarce that companies which cannot convince the government that they require deep-water sites are refused. In such cases, an attempt is made to persuade the applicant to settle elsewhere in the Netherlands. The presence of a large Dow plant on the Dutch part of the Scheldt estuary, and of the Mobil Oil refinery in Amsterdam, both linked to Rotterdam by pipeline, illustrates that such a solution may be possible in some cases. Rotterdam's thesis is that, by and large, rejected applicants will feel unable to find another appropriate Dutch site, and will go elsewhere. The central government, however, is more confident that firms which Rotterdam cannot accommodate may still be retained for the Dutch economy. Not every industry needs the services of mammoth ships.

In basic terms, this poses the question: Should Rotterdam be expanded even further, and if so, in which direction? The technical and economic implications of extending the artificial Maasvlakte I southward are now being studied.

Another possibility is the development of the delta area to the south of Rotterdam. Rotterdam, in fact, foresees the whole area between Rotterdam and Antwerp as developing into a vast and almost continuous port/industrial complex (the "Golden Delta"). The Dutch and Belgian governments have agreed on a scheme to improve Antwerp's canal link with the Rhine. When this development is completed, it will bring all the other projected delta port areas into good waterway communication with the Rhine and the Scheldt. The Dutch government has already gone far, as part of its famous Delta Plan, in equipping the whole area with a first-class road network, and railway links are also to be completed soon. Thus, the delta, now largely agricultural, is potentially available as a vast industrial development area for industries looking for a central position in the European market and for immediate access to a port.

There are two strong obstacles in the way of this plan by Rotterdam. One is the overcrowding of the western Netherlands, to which Dutch public opinion is already highly sensitive. The other reason is that many see the delta as an indispensable area for Rotterdam City itself and feel its sand dunes, coasts and open spaces should be developed for recreation, and its population centers expanded further for Rotterdam's overspill.

Port officials in Rotterdam feel that to a large extent, all these purposes, including the port expansion, could well be combined. A hard argument for doing so can be summed up in the following remark: "For every acre of land turned into an industrial site, it will result in $108,000 worth of added production value every year, and the State will get at least 25 percent of this in direct and indirect tax." [4] Officials state that if there were one lesson to be learned it is that they underestimated the industrial space requirements and were therefore forced into a position of sandwiching communities in-between industrially zoned land. They feel this was one of the major mistakes made in the past which they would avoid if they had another chance to do the overall planning today.

4.3.3 Amsterdam

Amsterdam is basically a city built upon a huge commercial tertiary sector. The city authorities are apprehensive about their long-term economic outlook. In their view (and rightly so), the tertiary sector will better be able to maintain its vitality if it is based upon a larger secondary industrial base. Acting as a constraint on general industrialization is a labor shortage in the Amsterdam area which has led the authorities to investigate the capital-intensive process industries in the secondary sector. These industries would not require large numbers of personnel but would result in high-value-added products and a significant commodity traffic requirement for the port. These economic objectives have sequentially led to the proposal that new harbor facilities and expanded infrastructure be installed for the purpose of attracting industry.

Amsterdam was straight-jacketed by the "mono-port" policy approximately 20 years ago and has not yet recovered. Amsterdam argues that it is now time for a more balanced regional approach to industrialization. It is argued that Amsterdam should receive priority in regards to development, because without immediate investment in the port areas, it is very possible that future cargo flows will not go to Amsterdam but to competing German ports in the Baltic. Amsterdam points to the paucity of heavy secondary industries in the region and the very slow growth in general cargo that has occured during the past twenty years.

Amsterdam is not a foremost contender for a major deep water port. There are hopes, however, to construct a new outer harbor on the mouth of the North Sea canal which would be capable of receiving 125,000 dwt vessels. Although this new outer harbor will not be exceptionally large (only 500 acres of dry area), the municipality of Amsterdam believes that it will be sufficiently stimulative from an economic standpoint to encourage additional industrialization in the area and to generate additional traffic flow.

Amsterdam's economic rationale for port investment is sound and consistent with the central government's regional equalization policy. But Rotterdam, anticipating a potential economic threat from French port policy, albeit long range, is making its case for new subsidies from the central government. The final decision will be political.

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[4] A Dutch port spokesman.

4.4 BELGIAN STRATEGY

4.4.1 The outward-looking Belgian economy

Situated in key position in Northern Europe and having a high population density, Belgium has long been an important participant in international trade. Within a 200-mile radius of Belgium's chief port, Antwerp, there are 73 million people whose standard of living is fairly high. In this area, there are the industries of the Benelux, of the Ruhr, the Rhine valley, the Saar, Northern France, and S.E. England. This unique position is strongly supported by other factors such as the high standard and diversity of communications, Belgium's industrial tradition, and the skill of its workers.

Due to the limited size of the Belgian national market and its dependence on foreign imports for the majority of its basic raw materials, Belgium has been forced to look outwards. This explains its liberal history of economic relations, trade orientation, and its desire for European integration.

Economic unions started in 1921 with the creation of the Belgium-Luxembourg Economic Union (UEBL) and continued with the economic customs union between the UEBL and The Netherlands. More recently, there was the formation of the Economic Coal and Steel Community and finally, the birth of the European Economic Community (EEC) in 1958.

Prior to the creation of the EEC, exports vital to the Belgian economy had often suffered from administrative contingencies and quotas set up by many countries to protect their own industries. This pehnomenon partly conditioned the traditional structure of Belgian production in favor of half-finished products which were better able to pass through international commercial trade barriers than more elaborate products.

With the formation of the EEC, a considerable effort was made to gain the maximum benefits from the new conditions of liberalized trade, which opened to Belgium countries with whom Belgium had already forged important trade links.

In order to fully appreciate the ever-growing role of foreign trade in the Belgian economy, one must bear in mind certain essential facts. With regard to exports, in 1968, the UEBL exported goods valuing $715 per capita. For comparison, the U.S. exported approximately $200 per capita. In that year, the value of UEBL's exports represented 38.0 percent of the combined Gross National Product, and 62.0% of these exports went to EEC countries. In the course of the same year, UEBL's imports valued $9.3 billion and exports, $8.3 billion.

The great advance in Belgian foreign trade began with the formation of the Common Market. In fact, before the signing of the Treaty of Rome, the rate of growth in Belgium's foreign trade was 5.6 percent per year, while on average, it has climbed 10.7 percent per year during the period 1958–1968. During this time, the annual average increase in world trade was only 8 percent and that of other industrial nations 9.1 percent.

By this means, UEBL's share of total world trade—although it hardly varied in the period 1953–1958—increased from 3.2 to 3.7 percent, and in trade with industrial nations, rose from 4.3 to 4.7 percent.

The concentration of trade between industrial nations is indicated by the following figures: in 1958 the four partners in the EEC took 45 percent of Belgium's exports, whereas ten years later the figure had risen to 62.0 percent. During the same period, the share of imports from the EEC rose from 47 percent to 56 percent.

The industrial experience of Belgium is not new. With several coal fields, an advantageous geographical location, and a solid artisan tradition, the nation had considerable advantages in spite of its limited size. In fact, the large-scale output of the last century, based on iron and coal, remained important for a long time. Even today, the manufacture of crude or half-finished products still plays an important role in the economy of Belgium.

But today, new techniques and new products, which require a supply of new capital, are revolutionizing production methods. In the process of modernization, several unfavorable elements have come into play.

There are the problems associated with the decline of the coal industry and the gradual replacement of this fuel by petroleum and natural gas.

The deterioration in commercial relations with the former Belgian colony in the Congo forced industrialists to look for other supplies of nonferrous metals.

Belgian industries are heavily dependent on foreign markets for the sale of many products. In certain fields which include chemicals and metals, exports exceed 55 percent of national production. Hence, industries were forced to ensure outlets for their products either by establishing branches abroad for the consumption of their goods or by joint ventures in foreign undertakings.

A lack of growth in population since the Second World War has resulted in labor shortages.

However, the situation is easing and the domestic labor force should increase by 3 percent by 1975. This figure will be enhanced by the numbers leaving the declining industries and also, by an increase in the female labor force.

Today, within the framework of the EEC, the traditional shackles to international trade are being discarded. As a result, manufacturers have shifted from half-finished products, and there is now increasing production of a number of high-quality finished products in both old and new enterprises. A high percentage of specialized manpower has been absorbed, and the result has been to place a greater value on labor and costly raw materials. Though Belgium's economy has long been outward-looking, an increasing orientation towards Europe is now taking place.

4.4.2 The national port: Antwerp

Forty-five miles south of Rotterdam is Antwerp, the third largest port in the world and, in Europe, second in size only to Rotterdam. Its long and difficult approach (58 miles up the Scheldt estuary which is mostly in Dutch territory) and its distance from the Rhine put it at a decisive disadvantage vis-a-vis Rotterdam, Le Havre, and Dunkirk as a bulk port in the era of 150,000 dwt vessels, let alone the new generation of 300,000+ dwt carriers.

One of its greatest difficulties always has been that the ownership of the terrain on either side of the Scheldt estuary is Dutch. This means that regional planning, involving networks of roads, railways, and canals, is a difficult job involving complex international negotiations. Nevertheless, Antwerp has been acclaimed throughout the maritime world for its speed and efficiency in dock work and short turn-around times.

Because it is an inland river port, Antwerp does not plan to develop deep water facilities (it will be deepened to take 125,000 dwt vs. 80,000 dwt presently), but rather to concentrate on expanding the size of the port, improving its general cargo handling function and increasing its process-oriented industry.

Antwerp constitutes the most vital industrial center in Belgium. It is estimated that perhaps as much as half of the nation's economic activity takes place in the greater Antwerp area. The Antwerp port represents a major asset to Belgium and is, therefore, of national interest. Perhaps half of all economic activities in Belgium are linked to the export and import of international trade. It is also estimated that approximately 70,000 out of 210,000, or one-third of the people employed in the Antwerp area, are working in port-related activities; this figure does not include the indirect or tertiary employment accounted for by banks, insurance companies, and others who benefit from the port-related activities.

The main reason for seeking expansion of the port lay with the needs or desires to promote greater industrialization of the Antwerp region and to provide port facilities that will take advantage of somewhat larger ships.

4.4.3 The petroleum issue

Since Antwerp will not be able to accommodate 250,000–300,000 dwt crude carriers, an agreement[5] with Rotterdam has been finalized to transship oil via a new pipeline from Rotterdam to Antwerp's oil and chemical complex. Landed cost of petroleum in Antwerp will, therefore, be higher than in Rotterdam, and if continued over the long run, it could place Antwerp at a competitive disadvantage in its industrialization efforts.

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[5] Length of agreement extends only for 10 years. At the end of the agreement Belgium might build its own off-shore oil receiving terminal or obtain crude oil by pipeline from Dunkirk or Le Havre.

Petroleum represents approximately 40 percent of the total tonnage handled at the port of Antwerp. It is estimated by European economists [6] that Western Europe will require 30 percent more power in 1975 than in 1969, and that petroleum's share of the European energy market will increase from 46 percent to 56 percent. Consequently, crude petroleum will continue to be the major growth commodity in European international trade.

After the 1967 Suez closures, major oil corporations were forced to divert tankers around the Cape of Good Hope. The increased transportation costs have been compensated for by ordering new tankers of an expanded capacity. The difference in the cost of transport between a middle-sized tanker (70,000 dwt) and a large tanker (200,000 dwt) is illustrated below. Prior to the Suez Canal being closed, the cost of transporting one ton of crude from the Persian Gulf to Antwerp, in a vessel of the 70,000 dwt class, amounted to about $5.09 and $6.78 per ton when the same vessel had to proceed via the Cape of Good Hope. In comparison, a 200,000 dwt vessel could carry one ton of crude around the Cape for $4.82, which means a cost savings of $0.17 per ton over the Suex route and $1.96 over the Cape route (see Table 4–12).

TABLE 4-12.—COST REDUCTION POTENTIAL TO ANTWERP OIL COMPANIES

[200,000 dwt vessels]

Vessel Size	Transportation cost on 1 ton of crude petroleum	
	Suez Route	Cape Route
70,000 dwt	$5.09	$6.78
200,000 dwt		4.82
Cost reduction	.17	1.96

CALCULATION OF SAVINGS

Year	Antwerp crude petroleum imports—million metric tons	Port revenue handling fee $0.075/ton	Amount of saving	
			Suez route at $1.16/ton	Cape Route at $1.82/ton
1965	18.5	$1,387,500	3,150,000	36,250,000
1969	24.5	1,836,500	4,160,000	48,000,000

Source: Arthur D. Little, Inc.

Supertankers not only pose problems in the shallow waters in this section of the North Sea but absolute restrictions are met at the beginning of the Scheldt estuary. Antwerp, being so far inland, could not berth the new tankers; Antwerp's petroleum companies had to make requests to the Belgian government for pipelines to their port refineries. The government's initial response was to search for a port on the Belgium coast where large tankers could berth.

4.4.4 A deep water alternative: Zeebrugge

Antwerp's major national competitor, accounting for 7% of Belgium's traffic vs. Antwerp's 90%, is Zeebrugge. Antwerp's and Zeebrugge's interport difficulties and differences increased with the coming of the supertankers.

To accommodate the supertankers, suggestions were put forward, and one that gained most favor was a proposal to establish an artificial island either at, or off, Zeebrugge. The Public Works Minister threatened his resignation if this were passed by the legislature. The matter was considered in what is known as the 'Verschave Report,' published in 1970, but there were many practical difficulties outlined in this plan, and the report therefore emphasized the high cost of such a project. Zeebrugge has adopted the general recommendations in the report but dropped the idea of the artificial island while Antwerp, defending its growing petroleum and petrochemical industry, favored the use of Rotterdam—its greatest rival. A pipeline has been started between Antwerp and Rotterdam (paid for by the oil companies). Needless to say, this brought great disappointment to the authorities of Zeebrugge.

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[6] Westinform Consulting Bureau, The Netherlands.

The government in 1969 approved funds for building a new maritime lock to take vessels only up to 125,000 dwt at Zeebrugge. Belgium's Minister of Public Works, Mr. De Saeger, has stated publicly that 125,000 dwt is the largest ship that Zeebrugge will ever take; however, there is still enthusiastic lobbying in Parliament by Members in the Zeebrugge region for a lock which can take even bigger ships.

The Verschave Report recommended that 200,000 dwt supertankers should be able to use Zeebrugge; it is now clear that they will not use the canal lock but instead will berth in Zeebrugge's outer harbor, under the protection of a break water, and the oil will be carried by pipeline to the refineries in the hinterland.

4.4.5 Resolution of national port priorities

New industrial areas and new highways are among other plans of the Zeebrugge authorities. Some 3,250 acres are available for factories and plants, each with its own dock.

Zeebrugge's attitude towards future development has been described as youthful and optimistic, despite the failure of their plans to build a giant artificial port to attract the supertankers.

Antwerp, not unnaturally, was envious of Zeebrugge because the smaller port seemed to be receiving urgent attention from the Government in its planning and was quite concerned with the possible loss of traffic to the rising Zeebrugge. Antwerp believed that her long-term economic position could potentially be eroded by Zeebrugge.

A new national port policy could be the outcome of two conflicting aims: (1) the construction of a new multi-purpose port on the coast, at Zeebrugge; or (2) the improvement of access to the existing multi-purpose port of Antwerp. In both cases, three well-defined types of ships were taken into consideration—namely, very large tankers, ore carriers of 100,000 to 125,000 dwt, and new types of liners, such as the large container ship and the LASH ship.

Regarding large tankers, Antwerp solved this threat for the short term by constructing a pipeline between Rotterdam and Antwerp as already mentioned.[7] Only if there should be a change-over to ships of such a size that they could not even enter Rotterdam, would the problem be posed once more. It is, however, obvious that an oil port for 500,000-tonners makes little sense for Belgium in view of the limited size of the national market. Such investment would be 80 to 90% dependent upon hinterland sources of trade, and that is too great a gamble. If such a port were required, it would probably be best to think in terms of a European port which, for physical reasons, would probably not be planned in Belgian waters, but in France.

It seems highly unlikely, too, that the Belgian steel industry is going to call for larger ore carriers. It cannot take into consideration lower freight charges alone, since there are more impotant limiting factors, such as stockpiling facilities, the increased costs of temporary storage and land-transport costs and facilities.

In the light of these facts, Antwerp concentrated on evaluating the respective advantages and disadvantages of the two possible solutions. It was pointed out by Antwerp, that as far as dry bulk carriers and container ships were concerned, Zeebrugge, after the necessary technical alterations, could provide a solution. But the same was true of Antwerp; the Antwerp solution was considerably cheaper, could be more quickly completed and, in addition, there was already a superstructure of ore and container terminals, as well as trained personnel, which was not the case in Zeebrugge. Moreover, Antwerp is much closer than Zeebrugge to the economic centers of the hinterland, and is connected to them by railway, highway and canal, while in the case of Zeebrugge, the railway is prartically the only means of transport which can fulfill this role. In the end, the Government decided to confirm formally once again that port priorities would be in Antwerp's favor.

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[7] The port handling fees on petroleum will be lost, but the important industrial complex will be safeguarded.

United Kingdom

D.2 PORT MANAGEMENT AND FUNDING

D.2.1 Port management

British ports may be managed by any of the following groups: a local public utility body (trusts), a state agency (the result of post-war nationalization of railways), a municipal agency, or a private company. Private-company ports, with a few exceptions such as Port Talbot, generally are small. The plan to reorganize the 11 main ports, representing 90% of Britain's traffic, under the ownership of a National Port Authority (outlined in a January 1969 Government White Paper) has been shelved by the present Tory government. As a result of the 1962 Rochdale Committee report, however, the 1964 Harbours Act created an *advisory* National Ports Council to formulate and keep under review a national plan for the development of harbors in Great Britain (exclusive of Northern Ireland and the Channel Islands), as well as to provide research, training, statistics, finance and organization assistance.

D.2.2 Sources of finance

As is mostly the case worldwide, port revenues are not a major source of finance for large-scale improvements. Government loans and grants, and open market borrowing (at close to government borrowing rate) are the main sources. In 1966, a system of government grants (Port Modernization Grants) was provided for 20% of the cost of any new harbor works and cargo handling plant and equipment that benefit Britain's national foreign trade. This amount is much less than has been the case in most other maritime countries where infrastructure and channel maintenance grants are typically greater than 50%. However, recent decisions (Japan, LeHavre) indicate that in other countries, subsidies for deep bulk terminals may be reduced to 15–20% on the ground that these terminals usually directly benefit only a few private companies.

D.3.3 Industrialization

Ports have played a major role in U.K. industrialization. Although there has been a lack of national coordination in port development, their importance has been recognized in the recent Maritime Industrial Development Areas (MIDA) concept. (See Section D.7.) However, MIDA has not yet resulted in any major undertakings.

D.3.4 Port planning methods

Each main port in Britain has come into being through an act of Parliament, primarily because the coastline below high water is owned or controlled by the "Crown Estate Commissioners." In each port, major developments (those costing over $1.2 million) require a further act of Parliament to enable the development to proceed. Thus, each major port in the U.K. has several Parliamentary acts associated with its past and present development.

The planning procedures for a particular development are quite complex and will vary with the nature of the development. Let us look at two alternative possibilities:

Development within a port boundary

Each port authority owns a certain quantity of land that is associated with its port and possibly within a large area under port control, but directly outside existing dock facilities. The Clyde Port Authorities, for example, control the shoreline development of scores of miles of the Clyde Estuary. If a development is to take place entirely on land or water owned within the dock perimeter, the local planning authority (town or county authority) has no direct control over that development. If the development is large enough to require an act of Parliament, objectors can petition against the bill and a public inquiry will be held. Such objections might come from local authorities or residents, on amenity or environmental grounds. The conditions of other authorities such as:

Crown Estate Commissioners
Board of Trade
The relevant estuary authority
The relevant river authority
The Water Resources Board,

must all be satisfied with regard to standards of effluent, air polllution, navigational hazards, etc.

An example of the outcome of such an inquiry was the direction from the Government inspector to the British Steel Corporation to prevent iron ore dust being blown from a new unloading facility at Bristol Deeps, across the Bristol Channel to the resort town of Weston-Super-Mare. New types of hoppers and handling equipment had to be designed.

Development of a port facility which overlaps with other authorities

Proposed development of a new docks facility outside of an existing port boundary will necessitate permission from the local city and county authorities and Parliament and the Minister (for the Department of the Environment). This is a more complex process than the former example.

Briefly, the procedures would be as follows:

a. A general outline of the proposed development is submitted to the local county council planning authority, which has powers under the Town and Country Planning Act of 1947 to authorize the development. If it is a small scheme the local authority may handle the whole matter. If it is a large scheme—e.g., a greenfield site development for a berthing facility, a steel works, or a petrochemical complex to be associated with the berth—regional development department probably will be involved; also the Minister, as well as the port authority. Such a scheme, if over $1.2 million, will also require the blessing of the NPC. There will be mutual agreement between the authorities and the Minister that a public enquiry should be held to consider the generalized scheme. Recent examples of such enquiries are:

The Roskill Commission on the siting of London's third airport,
The Hunterston development, and
New power station sites, which, whether coastal or not, almost invariably result in a major enquiry.

If local authorities try to reject such an enquiry (e.g., because it takes a long time), the Minister has powers to order such a procedure. His representative at the enquiry is a Government inspector.

b. A Court of Enquiry will be held, with the developers presenting their case to the authorities. Both sides produce expert witnesses on economic, industrial, technical and environmental factors.

At this stage, the inspector may drop the whole development (if objectors, for example, can show that a better alternative site exists), the scheme may be modified, or permission to go to the next planning stage may be granted. Let us assume the last.

c. The scheme is now drawn up in more detail and planning permission may well be sought from the Minister to accept the scheme *in principle.* For example, by presenting the Port Authorities Bill in Parliament. If he gives this acceptance, conditions from all the local interests must now be met by the developers.

d. A further public enquiry to consider all the details must now be held. At this enquiry all the authorities, with overlapping interests, will ensure that their various conditions are met. Members of the public—e.g., those whose property may be affected—can also have their say.

e. When all the details are worked out, the Minister will finally approve or disapprove the plans. He has the powers to reverse the Court's decision, "in the national interest," if he so desires. The final decision is thus basically a political one.

There are many variations on these basic planning procedural steps. But, the public generally have two enquiries at which to be heard—the general one and the detailed one—and the Minister makes the final decision.

Professor Weddle (see Section D.4.1) describes the British procedures as flexible, overlapping and highly effective compared to other countries. He believes the U.K. has probably the best controls on land development and utilization of any country (not necessarily the strictest). He believes that being flexible is the key to success, because it allows all interested authorities to work out the best solution for any particular scheme and to amend legislation on planning control in a continuous, dynamic way. Planning for the environmental factors in a formal way is relatively new, but is rapidly becoming an accepted and necessary part of port and industrial planning. (See Section D.4.)

Planning for works above high water mark

Most planning permission above high water and outside the port authority boundary is now granted or amended by county council planning authorities who have such powers under the Town and Country Planning Acts of 1947. This process involves the correct advertisement of the scheme, the making of objections, and, perhaps a public enquiry. By tradition, adjacent planning authorities have no voice at these enquiries. If a port development requires planning permission by the county authority for access roads, pipelines and services, these elements will be subject to the usual procedure once they cross the port perimeter. This is, of course, ususally the case.

Planning for works below high water

The Coastal Protection Act of 1937, Section 34, is concerned with any works round the coast of the British Isles which could obstruct the rights to navigation. A department of the Board of Trade (B.O.T.) is responsible for administering the Act. The department acts as the planning authority and even though, for example, a port scheme Bill has passed through Parliament successfully, work cannot commence below High Water Mark without B.O.T. approval.

Land reclamation, below high water mark needs B.O.T. approval and control, until the retaining wall is built. Dredging operations, and also the disposal plans of the liftings, need B.O.T. approval. The construction of cables and/or bridges over channels and estuaries needs approval. The construction of underwater outflows or intakes for power stations, industry ports, etc., needs B.O.T. approval. The B.O.T. will take advice, where necessary, from the Crown Estate Commissioners on any ownership problems. Its jurisdiction now extends to the U.K.-controlled part of the Continental Shelf in the North Sea where oil and gas exploration is undertaken. The U.K. Chamber of Shipping will inform U.K. shipping interests of any schemes to obtain objections, if any. All schemes must be advertised in Lloyds List and the local newspapers.

Effluent, pollution or environmental problems associated with any such projects come under the control of the appropriate Estuary authority, Ministry of Agriculture, Fisheries and Food (M.A.F.F.) and the particular port authorities themselves. They will lay down the limits on various kinds of effluent discharge.

Control of discharges or effluent into the sea (as opposed to rivers or estuaries) is more by voluntary cooperation with industry, etc. than by statute, although the MAFF does monitor water for radioactivity on a regular basis. There is, at present, discussion about whether discharge into the sea should be controlled by statute. The whole state of environmental pollution and control in the U.K. is detailed in the Royal Commission report, published in February 1971.

D.4 ENVIRONMENTAL PLANNING AND PROBLEMS

D.4.1 Planning methodology

Professor Weddle, an architect, and head of the department of landscape architecture at the University of Sheffield and a recognized authority on environment and land use, has used systematic (rather than truly analytical) approaches to environmental planning (EP). He has attempted to list all the main factors relating to the environment of a project, e.g.:

Scenic effect of project.
Effect on the surrounding land.
Noise effects.
Air pollution.
Employment changes.
Effluent generation.
Climate.

Then attempts are made to rank these factors for the project alternatives that exist, e.g., differing locations, and differing chimney heights. The alternative which gives the lowest social disruption is deemed to be the best. This alternative he calls "Least Social Cost Analysis." This approach is well documented in the Metra/Weddle Report for the Hunterston scheme. Such an approach is perhaps the most simple one.

Another approach is the cost/benefit method (as illustrated by the Roskill Commission). The methodology of this approach is given in the NPC report on the MIDA concept by Peston and Rees. The problems of the method relate to the difficulties of attaching realistic and meaningful costs to all factors. Professor Weddle believes there is much merit in attaching monetary values whenever reasonable, but that frequently this is impossible. Consequently, a mixed approach between 'Least Social Cost' and 'Cost/Benefit' is perhaps the most realistic.

A further step called "continuum listing," is to develop 'linked' lists of all the environmental factors. This means that the linkages show logical dependencies between the factors.

The next step, now under development, is to be able to mathematically express these linkages and factors in two and even three dimensions, i.e., to develop analytical modelling techniques to be able to evaluate the wide range of alternatives associated with any project.

In the U.K., Sheffield and London Universities provide formal courses on these topics. Such courses are increasing the awareness of the relationships between human and habitat factors.

D.4.2 Examples of environmental planning

(a) Professor Weddle has written part of the Metra/Weddle report on Hunterston. This report provides a good case example of the method used and the part played by environmentalists in decision making, and is discussed in section D.5.

(b) Some county planning authorities now have an environmental planning department. Indeed, considerable efforts in environmental planning have gone into the Medway MIDA Scheme in Kent; for example, landscape and agricultural experts were employed to help identify the areas of the countryside which should be preserved or developments which should be controlled to a very high amenity standard. Areas of the land and coast are to be set aside for leisure pursuits only. (See section D.6.)

(c) Over the past 10 years, the Thames estuary pollution has been reversed. (See section D.7).

(d) Development plans for Dover (a very busy cross-Channel port) are costing much extra money to by-pass the historic town with a complex road system. The benefit to tourism is seen as one method of justifying the cost of preserving the town.

(e) Southampton docks and Hampshore County Council planners have been concerned with the Fawley refinery developments. Southampton is essentially zoned on each side of the water; the east side is residential and recreational, while the west side is industrial. It contains the Fawley refinery, stilll expanding onto 500 acres of reclaimed land, and two large power stations. Elaborate precautions have been taken to design smokestacks that will eiminate local fallout from the smoke. Noise and vibration levels are also being monitored and equipment is to be designed to within a noise standard. Esso must pay $2.4 million extra to landscape refinery extensions before planning permission will be granted, and the proposed Chevron/Caltex refinery has been turned down, mainly because:

Congestion on Southampton water would result;
Too high a concentration of air pollution would result;
Not enough industrially zoned land available;
Local road congestion could occur.

(f) London's third airport, after two extensive public enquiries and a Royal Commission under Roskill, which suggested an inland site near London, is now likely to be placed in a near deserted area of the coast, by decision of the Minister. Such a change is likely to cost an *extra* $300 million, but such is the cost of preserving amenity and the inhabited environment!

(g) Almost every power station is now designed (external appearance and siting) by eminent landscape architects. The Central Electricity Generating Board (CEBG) has had an environmentall planning unit since 1960. The CEGB is deeply involved, from the preliminary design studies onwards, with all new power stations and transmission lines. The previous head of this organization has just joined the B.S.C. to start up a similar unit for steel mill design.

(h) The brick, sand and gravel industries have studied land economy and amenity rather well. They leased the excavated holes in the ground to the CEGB who filled the holes with ash and now some of the areas are being turned into golf courses and recreational areas: three incomes from one area of land.

(i) Finally, the Ministry of Transport uses an advisory committee to study the routing and plan the landscaping of alll major new roads. Again, such a committee is an integral part of the design and planning process.

It is evident that more and more developers and planners are seriously considering amenity planning as part of the design process and are, in fact saving time in the overall planning process by correctly planning for environmental factors at an early stage. This is saving much replanning as a result of public enquiries and pressures from the local communities.

Canada

E.2 CANADIAN PORT STRUCTURE

Port administration and policy in Canada depend on whether a harbor is privately owned or considered a public or government wharf.

Matters relating to a port when privately owned are the responsibility of the owner, who generally nominates a port manager, to be responsible for day-today operations. In Eastern Canada, the major private ports are:

Port Alfred—owned by Alcan.
Port Cartier—owned by Quebec Cartier Mining.
Sept-Iles—owned by Iron Ore Co. of Canada.

The privately owned wharves primarily handle the traffic of one major industry. They have been built by private capital, and government control is limited to navigation.

Since the Canadian Confederation in 1867, 315 harbors have been proclaimed public and come under the Canadian Shipping Act and the Public Harbor Regulation.

Actually, the responsibility for port administration is assumed by the Department of Transport, who appoints the Harbor Master, through the various Harbor Commissions, or the National Harbor Board and St. Lawrence Seaway Authority.

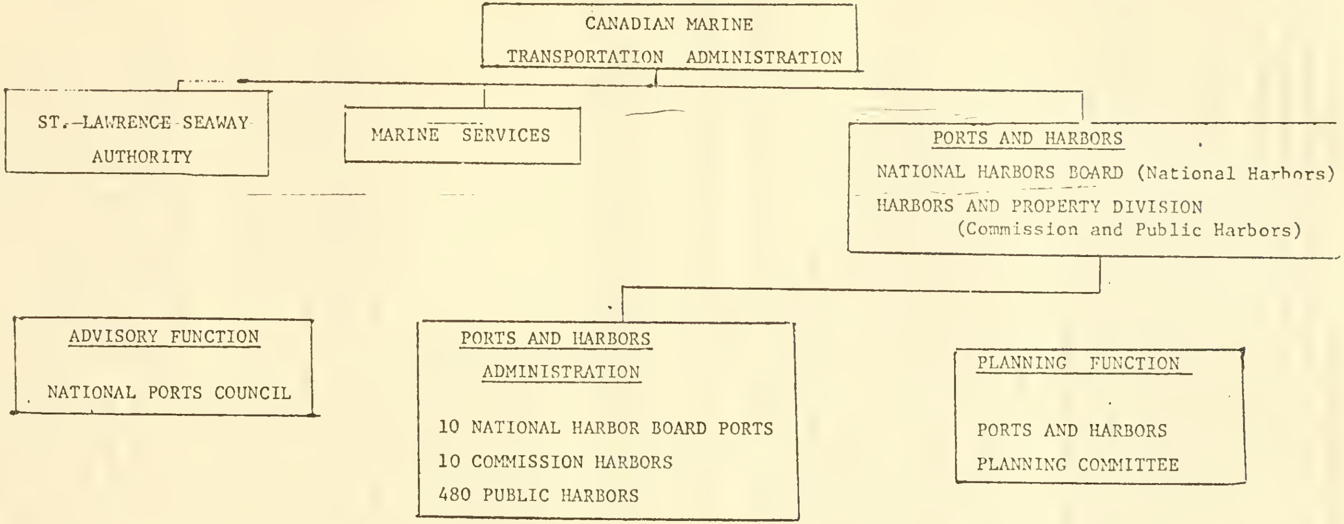
The governing legislation is:

The Canadian Shipping Act, Part X.
The Government Harbors & Piers Acts.
The Harbor Commission Act 1964.
The Individual Harbors' Commissioners Act.
The National Harbor Board Act 1936.
The St. Lawrence Seaway Authority Act.
The Navigable Wateer Protection Act.

The Department of Transport is directly responsible for ten harbor Commissions, over 300 public harbors and several thousand Government wharf. Eleven ports and two grain elevators are administered by the National Harbor Board since the 1936 disbandment of Harbor Commissions at Montreal, Quebec; Three-Rivers, Halifax; Chicoutimi, St. John; and Vancouver, British Colombia. The N.H.B. is composed of full-time members appointed by the Governor in Council for a ten year period and has power to employ and remunerate staff, to expropriate, to collect tolls, etc. The St. Lawrence Seaway Authority is also responsible for certain public wharves.

The Canadian port administration and policy regarding the management of public and government wharves is currently subject to criticism and revision. The existence of a centralized administration composed of four different federal bodies; Department of Transport, National Harbor Board, St. Lawrence Seaway Authority, and Department of Public Works, complicates management. It has been recommended (by the Glassco Commission Report) to the Federal Government to decentralize to eliminate duplication of work and give more authority to each port in matters relating to its own administration and policy. This will create semi-autonomous Port Authorities which will be responsible to the government but functioning with specific duties and powers that allow the local administrators a considerable degree of freedom. Specific recommendations include:

> A single Government Agency reporting to the Department of Transport should be responsible for Federal action in Harbor administration. An outline of the organization of this administration follows:


CANADIAN MARINE
TRANSPORTATION ADMINISTRATION
ST.-LAWRENCE SEAWAY
AUTHORITY
MARINE SERVICES
PORTS AND HARBORS
NATIONAL HARBORS BOARD (National Harbors)
HARBORS AND PROPERTY DIVISION
(Commission and Public Harbors)
ADVISORY FUNCTION
NATIONAL PORTS COUNCIL
PORTS AND HARBORS
ADMINISTRATION
10 NATIONAL HARBOR BOARD PORTS
10 COMMISSION HARBORS
480 PUBLIC HARBORS
PLANNING FUNCTION
PORTS AND HARBORS
PLANNING COMMITTEE

A Local Harbor Commission under this single agency should be used wherever possible, and harbors meeting the required criteria should be administered locally. The main quality of the agency should be flexibility in matters of operation of various ports. Direct nomination should be made when a local Harbor Commission is not possible.

The capital expenditures, public borrowing, and user charges should be subject to agency approval, but the local commission should be autonomous in day-to-day operation.

Responsibility for design and construction of marine work and dredging should be consolidated rather than divided among several agencies.

Cargo handling equipment, when possible, should be the responsibility of private industries.

The new agency should be responsible for overall harbor planning and advice on harbor policy.

Australia

F.2.3 Port management

a. Administration

In Australia, port administration is the responsibility of the six states, with the exception of the Northern Territory where ports are administered by the Federal Government. The administrative arrangements vary from state to state. Some ports, like Melbourne, are controlled by Harbor Trusts; government instrumentalities with a high degree of autonomy. Other ports are administered jointlly by one authority—as in the case of Sydney, Newcastle, and Port Kembla under the Maritime Services Board of the State of New South Wales. In other states, both systems operate side by side, and the Harbor Board is elected by interested communities (such as at Gladstone). A few ports are under private control. Yampi Sound is an iron-ore port controlled by the Broken Hill Co. Pty., Ltd., to supply its steel mills at Newcastle and Port Kembla.

There is no overall coordinating authority for the ports, but liaison is maintained through the Australian Port Authorities Association. Although it is a purely consultative body which can only make recommendations, the Association has achieved uniformity of practice in many aspects of port operations.

b. Financing

Government subsidy plays a role in port development, but generally only for infrastructure. Dredging (estimated at $1.30 per cubic yard removed beyond the 35-foot depth in Port Stevens channel) is proceeding at Port Kembla, funded within a $17.5 million grant of the New South Wales Government, as part of a $200 million expansion program of Australian Iron and Steel Property, Ltd., and some roll-on/roll-off berth improvement. New South Wales says it will spend $200 million on developing its ports in the next ten years; mostly at Port Kembla, Botany Bay, Newcastle, and Port Stevens. Queensland has spent $130 million in the past ten years. Dredging is expected soon in Gladstone and Brisbane which handles 25% of this state traffic.

British shipping companies have invested about $20,000,000 in container terminal facilities at the ports of Fremantle, Sydney, and Melbourne. Another $3,200,000 in private capital has been spent on container facilities in Brisbane. Port authorities, meanwhile, have begun large-scale complementary projects on dredging, docks, cranes, sheds, and depots. They are committed to spending at least $21,500,000 under contracts existing in 1969 and further heavy investment was then planned.

Japan

G.3 PORT MANAGEMENT AND FINANCING

G.3.1 Administration

The 1950 Port and Harbor Law marked an important milestone in port administration, by replacing centralized, national ownership of ports with port authorities—set up separately by local public entities—to develop or manage the ports in the capacity of "Port Management Bodies."

According to the law, there are three forms of port facilities construction: 1) direct government works undertaken by the central government through the Ministry of Transport (MOT), with the cost shared between the state and the

Port Management Body; 2) subsidized works undertaken by the Port Management Body, with only part of the cost supported by the state; and 3) independent works undertaken by the Port Management Body on its own budget. Completed port facilities are placed under control of the Port Management Body (PMB).

The law stipulates that port facilities under control of the Port Management Bodies shall be offered for public use and operated to be available to any person under the same conditions. The Management Body may be provincial in scope (Niigata), or more often municipal (Tokyo, Osaka). State duties are shared by various Ministries; e.g., Ministry of Transport (supervision of PMB for development, financing, cargo handling, safety of navigation, signals, and lights), Ministry of Forestry and Agriculture (fisheries, animal, and plant inspection), Ministry of International Trade and Industry (import and export licensing), etc.

G.3.2. Funding Structure

The MOT Planning Department estimates the typical share of port construction costs as follows:

Breakwaters and structural work—30%.
Channel dredging and improvements—30%.
Quaywallls and superstructure—30%.
Roads and communications—10%.

Private investment in cargo handling and warehousing is generally similar to road investment by the government. Practically all of the actual construction work is implemented by private firms.

For basic port infrastructure, including breakwaters and channels, the government (MOT) provides theoretically a variable share of the capital funds, depending on port type:

Specially designated foreign trade ports (18), 75%;
Major harbors (80, including 19 beyond 100,000 dwt), 50%;
Local harbors (951), 40%; and
Refuge harbors (10), 100%.

The actual share is somewhat different depending on location and negotiation. For example, the August, 1967 law for speciall port project expansion provides for 40% MOT, 40% prospective operator, 10% PMB, and 10% local government shares in loans to ad hoc Development Authorities in Osaka Bay and Tokyo Bay. These reduced 50% subsidy applies to important but congested areas.

Yokohama, an artifical island with 40 foot depth for general cargo and containers, has been subsidized over 75% MOT, "because of the leading position of the port for Japan economy". On the Sea of Japan side, the infra-structure of the East Niigata integrated harbor is 79% subsidized by the state as a depressed area. Reciprocally, the government has lately become concerned over the benefits enjoyed by a particular group of enterprises from the high cost development of deepwater bulk terminalls. The share of port infrastructure expenses to be borne by private enterprise has thus climbed substantially, as shown in the fiscal 1970 budget (Table G–1).

TABLE G–1.—1970 DISTRIBUTION OF DREDGING COSTS IN PETROLEUM AND IRON ORE PORTS

Depth	Government percent	Port management bodies percent	Private companies percent
Down to −40′	25	25	50
−40′ to −46′	20	20	60
−46′ to −53′	15	15	70
−58′ and deeper	10	10	80

Quaywalls, basins, and reclaimed land related to all four port categories are subsidized in the same amount by the government. But only those facilities administered by the Port Management Bodies receive such a subsidy. Some 70% of the trade volume is still handled in unsubsidized private berths, but this percentage is expected to decline somewhat.

As another illustration, the new port of Kashima (Sumitomo steel plant; 200,000 dwt ore carriers) is being created east of Tokyo to relieve the Tokyo Bay congestion and help a depressed area. About 200 billion yen ($550 million) will have been invested between 1960–75, including 70 billion yen of public investment and 130 billion yen of private investment—a relatively low public share. An additional 800 billion yen ($2.2 billion) in land preparation and utilities will be spent by private interests.

The financial situation of Japanese ports remains precarious. Mooring facilities and storage facilities are deemed a source of revenue by law, but—within the context of public service—the corresponding fees assume the character of commissions and are quite small by world standards. When the initial government subsidy is taken away, consolidated accounts of public ports show ⅓ supported by the sponsoring local public entities and ⅓ stemming from bond floating. This situation is being modified, as in most world ports, in the direction of higher port charges. Between 1955 and 1965, the growth of public harbor assets averaged 7% annually; and was 9% between 1960 and 1965, lagging much behind the increase in cargo volume handled.

G.4.5 Economic plan and improvement of port facilities

Since 1955, when Japan finally recovery from the war, and harbor assets came back to prewar levels, six National Economic Plans have been launched consecutively. These plans are: the Five-Year Self-Supporting Economic Plan, 1955 the New Long-Term Economic Plan, 1957; the Doubling National Income Plan, 1960; the Intermediate Economic Plan, 1964; the Socio-Economic Development Plan, 1966; and the New Socio-Economic Development Plan, 1970. Except for the latest and current one, projected growth rates were outstripped by the actual growth rates, and modifications were required after only two or three years of implementation.

As in France, the national economic plan seeks to direct the nation's general economic policies—serving as a guidline to private enterprise and business activities, without controlling or restricting them. The goal of a five-year plan is adjustable, and the plan itsellf is flexible and subject to modification in line with changes in international economic situations, trends in equipment investments, and fluctuation of prices.

The New Socio-Economic Development Plan, formulated in 1970 for completion by 1975, has set the actual economic growth rate at 10.6% and the GNP at US$267 billion in terms of the 1957 price level. This plan defines four major tasks: 1) internationalization and streamlining of the economy; 2) price stabilization; 3) promotion of social planning; and 4) maintenance of reasonable economic growth and promotion of economic development. Since these tasks are not independent, but correlated with each other, it is necessary to deal with them comprehensively and systematically for attaining a higher rate of growth and overall efficiency.

In particular, it is recognized that the capacities of ports and harbors are a controlling factor for the distribution of cargoes. The development of industrial ports is a powerful tool for economic growth as well as regional development. Social development, safety and elimination of public nuisance are essential to qualitative improvement of living conditions, not only in city life but in port and transportation activities. Consideration will be given to the reclamation of land that is free from public nuisance, consolidation of port facilities to secure safety, improvement of narrow channels, and provision of facilities to prevent public nuisance in harbors and sea.

G.4.6 development planning

The actual planning process may be summarized as follows.

(a) First, a macro-economic model, with some 60 equations, will project the GNP and given various assumptions, the optimum amount of government investment.

(b) The Ministry of Transport will establish 15–20 year forecasts from the correlation between cargo volume and GNP shown in Figure G–2. From these will be developed a five-year forecast for the port construction program, separated into domestic and foreign trade, and general cargo and bulk. These cargo volumes are then allocated between private company berths and public PMB' berths.

(c) MOT will then evaluate technical and budgetary requirements, starting from specific ratios such as: general cargo to be handled at the rate of 1000 tons per meter of quay length per year for 10 meters or more draft. Bulk cargo will be much larger, and containers may be handled at the rate of

600,000—800,000 tons per berth per year. Average budget requirements are approximately 10 billion yen ($28 million) per 1000 meters of quay wall for both infrastructure and superstructure.

In steps (b) and (c), MOT works with the local port authorities and company ports. There are no formal attempts to regionalize planning programs or to coordinate between competitive ports. In the major trading bays, Tokyo and Osaka Bays, port authorities and government are quite concerned about the need for more coordination. Both bays may even end up by having an area-wide port authority, already created on paper to handle overall government subsidy. But even MOT does not expect it to really work for 10 years, as those

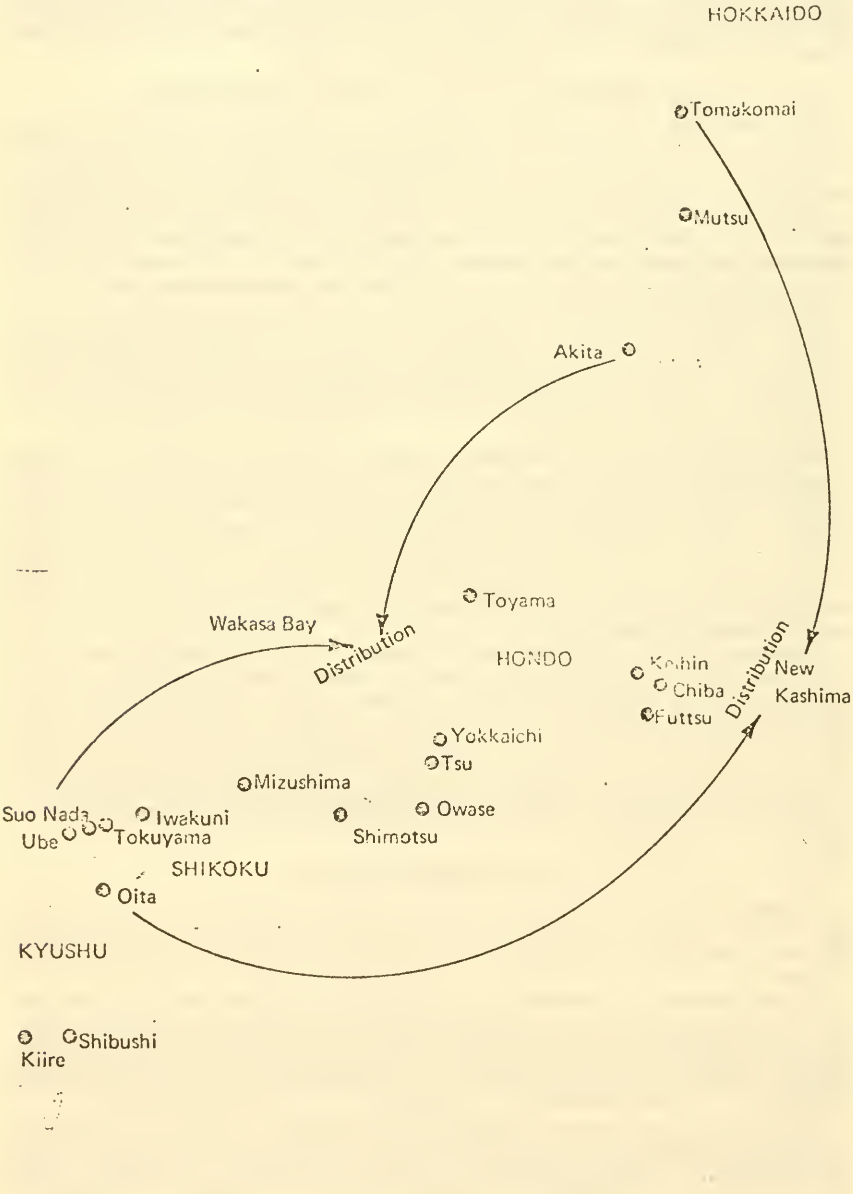


FIGURE G-3 PORT PROJECTS OF JAPAN

proud individual ports are quite jealous of each other. New consciousness about problems such as those encountered in Tokyo Bay—water pollution, lack of land, sea traffic construction, road congestion, air pollution by industry—may force the issue.

In the meantime, the government, besides giving its subsidies to the Bay Development Authorities (1967 law) rather than to the ports, is considering a new distribution port outside Tokyo Bay, near Kashima, to decongest the Bay. The main function of the port will be to receive and distribute oil products refined in the new refining and petrochemical industrial port planned in the north, in New Tomakomai near Muroran. Pipelines will carry these products inland, into the "backyard" of Tokyo-Yokohama-Chiba. If accepted, the Chiba canal project will provide an additional linkage.

Planning is present on the cabinet level as an attempt to save the major urban areas from choking while promoting the economy of less advanced zones, under the "Master Plan for Developing New Industrial Cities and Special Areas for Leading Industries." Illustrated in Figure G–3, this plan shows almost exclusively the coastal locations.

G.6.3 Citizen reaction

Despite the apparent earlier reluctance of Japanese citizens to complain about their worsening environment, public awareness and resentment is becoming a major force for change. During several days in the early summer of 1971, the following events were reported in local newspapers:

A Tokyo opinion poll showed of those questioned, 81% resentful of pollution, 29% afraid of induced disease, 55% doubtful about the possibility of future correction. Deficiency was particularly felt in greenery, clear air, and sunlight.

On June 28, a record 8500 Tokyoites, including 1000 school children, were sent home, suffering from eye irritation, sore throats, and headaches due to photochemical smog. The government had issued its 12th smog warning of the year. Record densities of 0.29 and 0.27 ppm of oxidant were recorded at two locations. Chiba, Saitama, Kanagawa, Yokohama and Kawasaki, all in the Bay, were also affected to a lesser degree. It is not infrequent to see people walking in the streets with gauze masks on their mouth and nose on such days.

There is concern that the water of Tokyo's Tama River is to blame for Kashin-Beck's disease, a bone ailment (deformed joints, pains) common among local residents. The Tamagawa filtering plant has been closed, and will remain so pending further research.

MITSUI suffered a loss through court action in Toyama. Although not occurring in Tokyo Bay, the event will have long range effects: Mitsui is to pay a total of $200,000 to a first contingent of 31 victims (8 ill, 6 dead and their families) of the "Itai-Itai" disease which has affected 514 people and dependents along the Jinzu River. This is the first ruling to attribute any environmental hazards to industry and should have far-reaching effects on public attitudes and jurisprudence. Other legal cases pending involve the Minimata disease linked to mercury (see above), and mass outbreaks of asthma in the petrochemicall port of Yokkaichi.

Mitsui is appealing the verdict, as it claims that the link to cadmium discharge from its Kamioka zinc-smelting plant is more than doubtful. After some days of hesitation, however, the company agreed to pay the indemnities under protest.

It is remarkable that not all the town residents were happy with the judgment rendered. Some 21,000 work at the plant and many are afraid of reduction in production output, as the city really depends on the plant for a living.

Finally, an Environment Agency went into operation on 1 July 1971, to unify the fight against environmental disruption.

G.7 THE RESPONSE: PORT PLANNING & DEVELOPMENT OUTLOOK

From the above discussions, one may infer that port development planning is vital to the Japanese economy and that natural and man-made problems put a tremendous strain on planners. The 1960's have witnessed some new approaches in planning for the following reasons:

Most of the 1940's and 1950's were spent recovering from World War II damage;

Technological change in transportation is bringing containers and superships; the mid-1970's ports will receive 500,000 dwt tankers (95-foot-draft), 300,000 dwt ore-carriers (80-foot-draft) and 40–45 foot draft containerships, all now under construction:

Consistent underrating of the rate of economic growth and of cargo handling requirements is resulting in unacceptable crowding and port congestion;

The MOT has had to consider more and more the efficiency of the total transport and distribution system in planning, along with the industrialization of depressed areas. Over the past year, the latter proposition has been helped by an even strong requirement: how to effectively decongest the Tokaido (Tokyo, Ise and Osaka Bays) area;

Awakening of environmental consciousness in the late sixties, beyond the traditional fishing rights problem, has currently focused attention on water-pollution and land-use efficiency; and

The transportation system includes not only primary and secondary marine transport, but interactions with airports, road, pipelines, and railroads.

Ports for regional development are designed on a large scale as "Bases for Seaside Industry" and are provided with large-sized, high-efficiency facilities through adequate investment at the outset. Plants will be built for annual steel production of 20 million tons and daily refining capacity of one million barrels of oil. The port-related industrial area should be more than 25,000 acres to receive large-scale industry and foster the advantages of the "Kombinat". Comparatively remote sites from central regions have to be selected for the new ports, because of the strong concern of current large communities regarding air pollution, public nuisance and environmental hazards, as well as for securing safe passages for the 300,000 to 500,000 dwt vessels. Such selection will contribute to regional development.

In the next five years, six new industrial ports, each about three times the size of Kashima, will be started to divert industrial expansion from the now-congested urban areas, along with several distribution satellite ports nearby. Four or five years ago, the justification for these new ports was to help depressed areas: Kashima or Oita, Tomakomai, and East Niigata. Now, however, the primary requisite is location away from large cities, followed by a favorable natural site, and general efficiency in transportation systems.

The new ports are shown in Figure G–3. From SW to NE, they are Shibushi (South Kyushu, 7,500 acres), Suonada (North Kyushu, 75,000 acres, 1 million dwt mooring), Akita and Mutus Bay (North Hondo), New Tomakomai (south Hokkaido, 75,000 acres) and Tsu-Matsusaka (Ise). Each will have a major refinery (1 million b/d), and probably a steel mill (20 million t/y) or an aluminum smelter. Products from the northern three ports will be exported or shipped to major consumption areas through "backyard" distribution ports: New Kashima for Tokyo Bay, Wakasa Bay for Kobe-Osaka and Ise Bays.

To further help decongestion, major Central Terminal Stations (CTS) for tankers are considered, analogous to the Kiire-Kagoshima terminal. As soon as one such terminal is built at Futtsu (with 25 million tons of crude storage on 25,000 reclaimed acres) at the outer entrance of Tokyo Bay, the bay may be closed to tankers altogether, as its pollution is the worst in the country. Other CTS's will be built for Osaka Bay and the Seto Inland Sea, all with 500,000 dwt to 1,000,000 dwt sea berths.

Inside the bays themselves, each with six or seven major ports, plans are drawn for cooperative specialization with the following aims (Tokyo Bay 1975, 400 million t/y):

(a) use of coastline and water to create pleasant amenities, free of public nuisance;

(b) specialization of each port by character, eliminating useless overlapping; and

(c) rational circulation of goods inland.

In particular, heavy industry will be confined to the southeast, around Kisarazu Port and towards Chiba.

Each pier will be specialized by cargoes, and more efficient systems than "first-come-first-served" are being tried. The handling of hazardous cargoes will be well separated from ordinary goods. Seaside trunklines for road-rail transport, and a mid-bay east-west embankment are planned to improve communications.

The May 1969, "Comprehensive Land Development Program for All Japan" strongly calls for harmony between man and nature. Along with future development of transportation systems and information networks, it aims at expanding land development throughout the country and basically reorganizing the overall land-use program. Environmental planning should be improved by the creation on 1 July 1971 of an Environmental Agency to group all the environmental activities of the various ministries such as the Ministry of Transport, Ministry of International Trade, Ministry of Welfare, and Ministry of Agriculture and Forestry. For example, MOT wants to preserve the natural coastline areas up to 13,000 miles out of the total 16,000 miles, but many of the currently concerned Ministries disagree with this policy. Inside MOT itself, practically the only work done on sea pollution inside ports is in the Machinery Division and the Shipping Division. An example of precautions taken recently include the quay surface slopes inshore at Oita to avoid run-off (from ore storage and handling spills) into the sea. The Ministry of Public Works is concerned with land use, the Ministry of Welfare and MITI are concerned with air pollution. In the earlly sixties, when regional dvelopment was a prime consideration, along with efficient land use, reclamation and excavation harbors were the preferred alternatives for new port construction. But natural sites became scarce, deeper channels were required and decongestion of the major bays become the prime concern. Offshore sea berths and central terminal stations outside industrial bays, and large industrial harbors in virgin sites coupled with "backyard" distribution ports, are now favored.

When possible, MOT's Planning Division prefers reclamation harbors in a natural site to excavation harbors, because they are cheaper and provide additional land. If one looks at the experience in ports of more than 45 foot depth, the past five-years' experience is in favor of excavated harbors: four of them (Tomakomai, Kashima, Niigata, and Kamasawa) between 1965–70 versus practically no reclaimed and natural-site deep water harbors; and four inland sea types (private companies at Kiire, Oita, Tokuyama, and Keiyo), as well as sea berths and monobuoys in major bays. But when one looks at the next five year plans, only one excavated harbor appears, New Tomakomai, which has been planned to protect good beaches, by opening basins behind them (like at Dunkirk, France). The five other new industrial harbors, although in a less-advanced state of planning, will probably be reclaimed at natural sites.

New artificial islands are planned at Wakayama and Sakaide, with possibly some large islands in Tokyo and Osaka Bay to "get things way from people." The Kiire CTS terminal operating results are satisfactory, but indicate an advantage to jetty mooring over offshore berth for discharge speed, as well as a dire need for faultless handling equipment and efficient oil booms to contain oil spills created by the former.

Appendix H

The Middlle East

H.1 SUMMARY

Long-haul transportation from the Persian-Arabian Gulf to Europe and Japan was the rationale for the supertanker developments in the 1960's. Crude reserves of ⅔ of the world supply (and production ⅓) make the Middle East a major source of world supply. The initial concentration of production in a few countries, and in the hands of one consortium in each of these countries, helped create major terminals and foster technological developments. Through a literature survey, and brief field trips and interviews in Iran and Kuwait, the following highlights became apparent:

250,000 dwt tankers are received by practically all major producers, except for Iraq which pipes much of its current production to the Mediterranean Sea, and has a program to develop a deepwater terminal in the mid-1970's. Two of the three largest producers are preparing for 500,000 DWT in the early 1970's; the third already receives 350,000 DWT tankers. Sizes in the range of 750,000 DWT to 1,000,000 DWT are expected in the late 1970's.

The producing consortium generally owns and operates the terminal, but the facility may revert ultimately to the host country (as in Iran after ten years), although the oil companies remain as terminal operators.

The oil throughput is generally the major source of national income by far, in the producing states. Some projects to diversify (Aluminum Smelter plant in Bahrain) have recently picked up strength.

Site selection depends on port location versus the feeder oil fields, deepwater access, reduced dredging maintenance, gravity-loading capability, and political safety. Computer models are used in the planning and design process, hydraulic models for the actual depth requirements in channels and at berths.

Extensive experience has been acquired with underwater pipelines up to 48 and 56 inches in diameter, and with various berth structures: single buoy or multi-buoy offshore berth, sea island, jetty and T-piers, and underwater storage.

Environmental problems stilll appear around deepwater terminalls, possibly due to warm water conditions. Faulty valves, equipment, and human error are the cause of spills, but in much less volume than released by offshore oil-well leaks and operations. Strong action is taken by some governments about spills and bilge disposal in port, while an oil company cooperative is planned for larger spills. Dispersants and burning are common corective actions.

H.2 PERSIAN GULF LOADING TERMINALS

The Persian-Arabian Gulf is a natural seafront for almost ⅔ of the world's crude oil reserves and about ⅓ of current production, most of which is exported to Europe and Japan. This long-distance haul has fostered the development of Mammoth tankers, and there is a concentration of deepwater terminals analogous to those being developed in Europe and Japan.

Nine countries are producing 17 million barrels per day (May 1971), showing a 20% increase during the five first months of 1971, compared to 1970. Saudi Arabia (4.83 million, 94% ARAMCO), Iran (4.25 million, 91% Consortium), and Kuwait (3.4 million, 93% Kuwait Oil Co.) are the major producers, followed by Iraq (1.85 million), Abu Dhabi (1 million), Qatar (0.47 million), Oman Duabi, and Bahrain. Production in each country is generally held almost entirely by one particular group of companies, except in Abu Dhabi where an offshore group and an onshore group take almost equal shares. It is not surprising then that these groups have developed important terminals to improve the offtake of a vital production. Figure H–1 and Table H–1 show these terminals, and their controlling depth of access channels or berths.

APPENDIX I

Bantry Bay—Ireland

I.1 SUMMARY

Bantry Bay was the first transshipment terminal built as part of a system involving supertankers that for several years were the largest afloat (325,000 dwt). Gulf Oil has since buillt similar terminals at Okinawa and Point Tupper (Nova Scotia); each, however, has a refinery rather than mere transshipment storage to serve several refineries saddled with shallow water terminals. Another oil company, CALTEX, has since built a "Central Terminal Station" at Kiire in Japan, and several more are being considered in Japan and in Western Europe. All these terminals are designed essentially to receive 300,000–500,000 dwt tankers out of Kuwait Kharg Island (Iran) in the Persian Gulf. Some ports are planning for an ultimate capacity of one million dwt.

In the particular case of Bantry Bay, the objective was to maintain, with minimum investment, the competitiveness of the company's European refineries, whose shallow terminals were ill-equipped to receive the supertankers being studied by rival oil companies. After 2½ years of experience, one may draw some conclusions about the strengths and weaknesses of the project.

Economics: Transshipment by 325,000 dwt was determined to be 30–40% cheaper than the use of 80,000 dwt vessels, the maximum size possible in the early 1960's until Rotterdam deepened its port. Direct shipment in carriers of 200,000—250,000 dwt is a slightly better economic solution using ports which have since been deepened independently. Another advantage of the Bantry Bay approach was the opportunity to select a virgin site, away from congested routes.

Environment: The company has employed good environment planning:

Ship design includes ballast, bilge and sewage retention, with cargo tanks smaller than what may soon be required by IMCO, and conservative scantling. Ballast water treatment equipment, capable of reducing water pollutants to less than 4 ppm is a good alternative to the ballast tank system.

Traffic control is tight, allthough it does not inclulde a land-based radar system for the very limited traffic involved. The success of the Doppler

Sonar Docking System mounted on one ship should determine the installation of a similar system on the sea island, as in Okinawa, Verdon and other ports.

An effort has been made, at least partially successful to limit the visual intrusion of the tank farm. Tanks are semi-buried and the spoils used to build a dorsal ridge which further reduces their protrusion. No other social or environmental impact has been noted. Besides the possible opening of the earthen dike in case of catastrophic rupture of a full tank, the only "black spot" is the occurrence of a couple of minor oil spills during cargo handling. Although equipment modification should help in the future, this risk cannot be discarded entirely. A program of water quality and biological monitoring has been initiated by a local college. In the meantime, no water pollution has appeared and the stream trout fishing and resort activities have been proceeding. In fact, the "big ships" have even provided an added tourist attraction.

No refinery or other basic industry is expected to be allowed in the area, even though a company recently looked at ship repair activities. Dry bulk storage does not seem to have been contemplated.

I.4 INSTITUTIONS AND FINANCING

Gulf Terminals (Ireland) Ltd. was appointed port authority by the Irish Federal Port and Waterways Department, and Gulf made the Port Authority by-laws on the basis of Milford Haven and other terminal experience. These by-laws were approved by the Irish Federal Port and Waterway Dept. and the Irish Tourism Department. Terminal performance is assessed by the Refinery Division (London), now in charge of Marine Terminals, with the Marine Operations Groups or Gulf Transportation, Inc., helping on request. The terminal is leased to Gulf Europe. As mentioned before, Gulf Oil did not receive any government financing, and paid all of the capital costs.

I.7 ENVIRONMENT IMPACT

I.7.1 Planning and results

Environmental planning, whether on Gulf's own volition, or spurred by the Irish Tourism Board (Dublin) and Department of Fisheries, seems to have been serious in Bantry Bay's terminal and in ship design. An Air and Water Conservation Advisor is now Informante in Residence in Gulf Headquarters in Pittsburgh. Gulf Energy Environment Services (San Diego) and Gulf Degremont (Liberty Corner, New Jersey) also deal directly with environmental matters. Regulations were submitted by Gulf Oil on the basis of Milford Haven and other experiences and approved by the government. There were no baseline studies, only borings for pile driving, but neither dredging nor fill was needed and there are no traces of irreversible damage by operations such as pipelaying, and island dock construction. Semi-buried tanks and an embankment make a reasonable attempt to reduce the tank farm profile, which has nevertheless raised a few protests.

Not much concern for water pollution was experienced, and local residents were easily reassured by the strict control measures adopted. There was very little complaint from fishermen who fish outside the bay, but some local politicians and the terminal manager called to Town Hall once in awhile. The biggest spill (January 1970) went as far as the Federal Government, which took Gulf to court for a small fine.

Question 6.—On page 290 of the transcript, you cite a conclusion that "Foreign experience shows that unless carefully regulated development of deep port facilities are likely to generate substantial expansion in the immediate vicinity or shore of refinery-petro-chemical complexes". How or should such development be regulated in the context of H.R. 7501 or similar legislation?

Answer.—As we have stated in our testimony before this Committee, some States seek such economic expansion and others do not. Determination as to whether or not industrial expansion is desirable and where such expansion should take place are separate decisions from the deep port question and can best be resolved through coordinated land use planning. Basic authority over such development should remain with the respective States.

Question 7.—On page 291 of the transcript you indicated that, "based on present information, only for a few certain locations on the West Coast do prospects appear reasonable for channel deepening to accommodate supertankers". Provide for the record these specific locations and a description of the project in terms of dredging activity and costs to accomplish this result. Under what authority would such projects be initiated?

Answer.—The West Coast Deepwater Port study indicates that channel deepening to accommodate supertankers could be accomplished in the San Francisco Bay area and in the Los Angelles/Long Beach area. In the San Francisco Bay area the most likely deepwater port facility for ships up to 250,000 dwt was found to be in Central San Francisco Bay. The total first cost for this site would be $416.8 million, of which $104.4 million would be for dredging. The channels would be deepened to a depth of 79 feet over the San Francisco Bar and 73 feet inside San Francisco Bay. The removal of 58 milllion cubic yards of dredged material would be required.

In the Los Angelles/Long Beach area, the Los Angeles and Long Beach Harbor sites are considered to be the most likely sites for a facility to accommodate ships up to 325,000 dwt. The total first cost for the Los Angeles facility would be $577.1 million, of which $152.3 million would be for diking and dredging. Channels would be deepened to 94 feet, outside the harbor and 90 feet within the harbor. The removal of 79 million cubic yards of dredged material would be required. The total first cost for a facility at Long Beach would be $702.3 million, of which $315.4 million would be for diking and dredging. Channels would be deepened to 94 feet outside the harbor and 90 feet within the harbor. The removal of 171 million cubic yards of dredged material would be required.

The purpose of the West Coast Deepwater Port Facility study is to indicate the comparative advantage and disadvantage of deepwater port facilities. The study does not recommend construction at any specific sites. The public interest would appear to be served best by allowing private ownership and operation of deepwater port facilities under a licensing or permitting system such as proposed by H.R. 7501 or similar legislation. Also, there is no precedent for Federal development of port facilities. Traditionally, the Federal interest in navigation facilities has been restricted to channel dredging and breakwaters.

In the event it is found to be in the public interest, the Corps of Engineers could recommend under its traditional role, Federal improvement of the channels in connection with the San Francisco and Los Angeles/Long Beach deepwater port alternatives. Such Federal participation would require further detailed studies and would be subject to specific Congressional authorization.

Question 8.—In reference to your comment on page 291 of the transcript pertaining to private or non-federal public ownership, exactly how will the overall public interest be protected, assuming private ownership, under H.R. 7501 or similar legislation? What specific federal controls and regulations are contemplated or needed to accomplish this objective?

Answer.—The protection of the overall public interest in the construction and operation of privately-owned deepwater ports, and the nature of required federal controls and regulations, are the subject of a recently completed study for the Institute of Water Resources by Robert R. Nathan Associates entitled "Institutional Implications of U.S. Deepwater Port Development for Crude Oil Imports."

Copies of the "Summary of Major Findings and Conclusions" of the report are attached for the record, and for the convenience of the Committee. In addition, copies of the complete report are being furnished.

While the views expressed in the report do not necessarily represent the views of the U.S. Army Corps of Engineers, we consider that the study as a whole correctly defines the nature of the public interest in deepwater ports, and competently analyzes the various legal, policy, institutional, and regulatory requirements for the protection of the public interest.

Question 9.—Provide legal opinion further supporting your response for the record, page 299 of the transcript, regarding Corps authority over construction and operation of deepwater ports.

Answer.—The Corps of Engineers' regulatory authorities are based on Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403), which prohibits the unauthorized obstruction or alteration of any navigable water of the United States. Under the provisions of that Act, any construction in, over, or under any navigable water of the United States, the excavation from or deposition of material in such waters, or any other work which affects those waters is unlawful unless the activity has been authorized by the Corps of Engineers. Not only are factors of navigation considered in the evaluation of permit applications, but fish and wildlife, environmental concerns, and any other factors which may be relevant to the general public interest are evaluated as well. (See generally, Zabel v. Tabb, 430 F.2d 199(5th Cir. 1970), *cert. den.*401 U.S. 910(1971)).

The Section 10 authorities have been extended beyond the territorial sea, by subsection 4(f) of the Outer Continental Shelf Lands Act (43 U.S.C. 133(f)), which provides that: "The authority of the Secretary of the Army to prevent obstruction to navigation in the navigable waters of the United States is extended to artificial islands and fixed structures located on the outer Continental Shelf."

The general Section 10 authority therefore applies to structures erected within the contiguous zone or the high seas, so long as the structure is affixed to the continental shelf.

Exercise of the subsection 4(f) authority over structures on the outer continental shelf has been mainly restricted to the control of the placement of oil drilling and oil transport facilities. Those facilities, and other matters relating to resource extraction, are generally evaluated by the Department of Interior prior to its lease of the necessary lands. Where permit applications involve mineral-leased lands, the Corps of Engineers has therefore restricted its reviews of those applications to matters of navigation and national security. Assuming that superports would not be under mineral leases, the evaluation of superport permit applications (or indeed, of any non-resource-related structure) would necessarily be wider in scope, with the final extent of evaluation being dependent on the degree of involvement and evaluation by other Federal agencies.

Examples of permit matters which require a broad scope of evaluation have occurred in several instances in the past. Thus, proposals for various forms of outer continental shelf development off the coasts of California and Texas have been controlled administratively under the subsection 4(f) authority. Likewise, proponents of construction of off-shore nuclear power plants have recognized the need to apply for Corps of Engineers permits for such utility facilities, both from the standpoint of construction of artificial islands and for the existence of power lines coming into and within territorial waters. Perhaps the most notorious instance of an application for a non-resource-related structure involved a series of proposals in the mid-1960's for a quasi-independent nation, or gambling resort, on outer continental shelf reefs four miles off the Eastern shore of Florida. Development was halted by the Corps of Engineers for failure to apply for a permit. The ensuing legal disputes questioned whether the Corps' subsection 4(f) authority could be applied to artificial islands or fixed structures which were not erected for the sole purpose of exploiting the resources of the seabed.

Confusion has arisen regarding the type of structures which were to be subject to subsection 4(f) authorities because of the apparently restrictive language of subsection 4(a) of the Act (43 U.S.C. 1333(a)(1)), which provides that: "The Constitution and laws and civil and political jurisdiction of the United States are extended to the subsoil and seabed of the outer Continental Shelf and to all artificial islands and fixed structures which may be erected thereon for the purpose of exploring for, developing, removing, and transporting resources therefrom to the same extent as if the outer Continental Shelf were an area of exclusive Federal jurisdiction located within a State: *Provided, however,* That mineral leases on the outer Continental Shelf shall be maintained or issued only under the provisions of this subchapter."

Other subsections of Section 4 repeat the phraseology of subsection (a), or directly refer to that section in describing the class of structures or activities which are subject to enumerated Federal control. As an example, subsection (e)(1) delimits the Coast Guard's authority over "the islands and structures referred to in subsection (a) of this section". Subsection 4(f) carries no such qualification, but instead simply extends the authority of the Corps of Engineers to "artificial islands and fixed structures located on the outer Continental Shelf." The precision of the language used by the draftors indicates that the omission of the qualifying language was intentional, and demonstrates a recognition that any form of artificial structure, whether or not intended for purposes of resource extraction, would potentially be an obstruction to navigation, and woulld therefore require adequate controls over its placement and design. Indeed, some authority over potential obstructions to navigation would be necessary in order to assure the continued maintenance of the right of freedom of navigation, recognized by Section 3 of the Act of (33 U.S.C. 1332).

Three cases have to date been litigated on the question, all arising on the above-mentioned reefs offshore of Florida (Atlantis Development Corp. v. United States, 370 F.2d 818 (5th Cir. 1967); United States v. Ray, 294 F. Supp. 532 (S.D. Fla. 1969) and 423 F.2d 16 (5th Cir. 1970).) The courts upheld exercise of Corps of Engineers authority over the structures both because construction of casino-resorts would be a form of "developing" the resources of the seabed (apparently within the meaning of subsection (2)) and also because the United States had numerous "vital national interests" in the seabed over which it might legitimately exert its authority. Incidental to the concept of developing the seabeds was recognition that the emplacement of any structures woulld physically interfere with the exclusive right of the United States (recognized by the Convention) to explore and develop the resources of the seabed and suboil. (U.S. v. Ray, 423 F.2d at 20). Similarly, the vital national interests, such as national security, or environmental concerns, would in varying degrees be affected by any physical obstruction, regardless of its purpose.

The Section 10 permit program thus allows screening of applications for the construction of superports or other deep water facilities, and the detailed evaluation which would be necessary in determining that a proposed location and design is within the general public interest. Considerations which more properly fall within the sphere of expertise or authority of another Federal agency would of course, by standard Corps practice, remain under that agency's control.

Question 10.—Assuming a private entity wished to construct and operate a deepwater port within the three-mile limit, what federal permits and approval would he have to obtain and under what provisions of law? What state approval or permits would be required?

Answer.—A federal permit would be required pursuant to Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403), wherein the Army Corps of Engineers exercises regulatory authority over the construction of any structures in navigable waters of the United States, the dredging and/or filling of any navigable waters of the United States, including the territorial seas, and any other activity which would alter or modify the course, condition or capacity of a navigable water of the United States.

State approval or permits would vary from state to state depending on whether or not a given state has a permitting program and the requirements of the program.

Question 11.—In regard to construction and operation of a deepwater port on the high seas outside the territorial sea and contiguous zone of the United States, what national defense and national security features of the deepwater port would be required or contemplated by the Department of Defense? What requirements should exist in the context of H.R. 7501 or similar legislation and the actual permit conditions in relation to national defense and security considerations?

Answer.—The construction and operation of deepwater ports adjacent to the US coast, whether on the high seas or within the US territorial sea would give rise to the need to provide for the protection of the facility in defense planning. Beyond this ormal requirement the primary concern of the Department of Defense is to assure both continued confidentiality where appropriate and noninterference with national security related activities in or under offshore waters. In this regard it is essential to provide a mechanism whereby decisions dealing with site-selection for deepwater port construction are made only after national security requirements are fully taken into account. To this end, all bills authorizing or regulating construction of permanent installations in off-shore waters (whether for deepwater ports or for some other purpose) should contain a provision to the effect that no permit shall issue if national security interests would be adversely effected thereby. This is analogous to provisions with respect to mineral exploitation oriented structures already contained in the Outer Continental Shelf Lands Act.

The CHAIRMAN. I am going to call the Honorable John Court, Deputy Assistant Administrator for Planning and Evaluation, Environmental Protection Agency, and at the same time I think it would be well to have the Honorable Vincent F. DeCain, Deputy Assistant Secretary for Environment, Safety, and Consumer Affairs, U.S. Department of Transportation, who is accompanied by Rear Adm. William M. Benkert, Chief, Office of Marine Environment and Systems of the U.S. Coast Guard, call them all as a paenl, since they are all on the same subject of environment.

Mr. Court, I do not know how long your statement is though, but can you give it to us in approximately 15 minutes?

Mr. COURT. I believe so.

The CHAIRMAN. We want to get all the necessary detail, and when you are through, before we start to question you, we will have Mr. De Cain give his, and then we will question both of you.

You do have a statement, Admiral?

Yes, and I see it is a very brief one.

So, we will proceed and start with Mr. Court.

STATEMENT OF HON. JOHN COURT, DEPUTY ASSISTANT ADMINISTRATOR FOR PLANNING AND EVALUATION, ENVIRONMENTAL PROTECTION AGENCY

Mr. COURT. Good morning, Madam Chairman, and members of this distinguished committee.

It is my pleasure to appear before you to present the views of the Environmental Protection Agency on our assessment of offshore port facilities from an environmental point of view.

The question of deepwater port facility planning, construction, operation, and regulation is enmeshed in the energy problem. Such facilities, if properly designed, constructed, and regulated, can play a key role in minimizing environmental hazards inherent in water transport of oil.

The present level of U.S. oil imports, 3.8 million barrels per day, is expected to double by 1980. It may well increase to as high as sixfold by the year 2000.

That is a staggering amount of oil, requiring a tremendous fleet and greatly expanded port facilities and posing formidable pollution steps now.

With the quantity of oil entering the United States increasing at such a pace, we must do all that is possible to minimize the environmental hazards.

Information provided by the Coast Guard reveals that during the last 10 years, there have been over 500 tanker collisions throughout the world, and that 80 percent of these collisions occurred while the tankers were either entering or leaving a harbor, and most of these probably involved oil spills.

If the number of tankers entering and departing our existing harbors increases to a level commensurate with the projected need for the importation of oil, the hazards are obvious. Consequently, construction of a deepwater port facility, anchored as much as 30 miles offshore, to which deep draft tankers could hook up and unload into a pipeline connected to the shore, becomes a compelling alternative to simply increasing the number of vessels entering our ports.

In particular, the construction of such ports would decrease the tanker traffic and lightering operations in already congested harbor channels, thereby significantly reducing potential risks of collisions and oil pollution damage.

Secondly, such offshore facilities would be able to accommodate the new, very large tankers, commonly referred to as supertankers, which are now being built.

These new tankers can be as large as 500,000 deadweight tons while, with few exceptions, the largest fully loaded ship which can enter U.S. ports today weighs about 65,000 deadweight tons.

In studying the potential environmental problems which various types of tanker docking facilities pose, we have found that vulnerability to environmental damage is the greatest at inshore sites, less at offshore sites, and least at far offshore sites.

Estuaries and coastal wetlands are the most biologically productive areas of the marine ecosystem, and are also the most sensitive to damage from construction and oil spill effects.

With inshore sites, such damage would be unavoidable.

At offshore locations, however, construction effects are minimized, and the probability that spilled oil will enter sensitive estuarine areas is greatly reduced.

In addition, the weathering of oil which may be spilled at an offshore site could take place en route to an estuarine or other coastal area and would tend to remove the most immediately toxic and lethal fractions of the oil.

Not only would the offshore port handle less traffic than our congested harbors, but it would be designed and operated so as to provide maximum spill protection and safe vessel passage through installation of modern traffic control devices and navigational aids covering the approaches and maneuvering areas of offshore deepwater sites would be vital.

The use of larger, more efficient tankers at specially designed offshore terminals would mean that fewer vessels would be needed to carry the increased volume of U.S. oceanborne crude oil imports expected by 1980.

The propensity for collision and accident exposure would be less with larger tankers using offshore terminals than with movement of the same volume of oil via more numerous and smaller tankers using existing terminals and port channels.

Our concern is not limited to the marine environment in an area surrounding a port facility, but it extends to the environmental consequences which deepwater ports would undoubtedly generate in land-related activities.

In our view, the law should provide a mechanism to permit the development of deepwater port facilities, should allow for legitimate State and Federal concerns, and should provide for the protection of the marine, coastal, and shore environment.

The administration bill which we support is such a comprehensive piece of legislation.

The administration bill, introduced in the House as H.R. 7501, authorizes the Secretary of the Interior to issue a license for the construction or operation of a deepwater port after appropriate determinations have been made by the Secretary. The Secretary's finding must include, among other things, that the applicant is financially responsible and has demonstrated his ability to comply with applicable laws, regulations, and license conditions, that the construction and operations of the proposed facility will not unreasonably interfere with international navigation or other reasonable uses of the high seas, and that the facility will be located, constructed, and operated in a manner which will minimize or prevent any adverse significant environmental effects.

Prior to the issuance of a license, the Secretary shall consult with the Governor of any State off whose coasts the facility is proposed to be located to insure that the operation of the facility and directly related land-based activities would be consistent with State land use programs. This provision is intended to reinforce the administration's encouragement of the States to develop their own land use programs and to provide the States a voice with respect to the type of facilities that would be constructed in the waters extending from the States coasts.

The proposed bill further charges the Secretary to consult with all interested or affected Federal agencies in carrying out the responsibilities which would be given to him with regard to the licensing of deepwater port facilities.

We would cut through the redtape in that an application for such a license would constitute an application for all Federal authorizations required for the construction or operation of the port facility. This does not mean that legitimate concerns would be ignored.

Thus, the Secretary must insure that the applications require all of the information required by other agencies. For example, the application would have to contain sufficient information for us to issue a discharge permit pursuant to the provisions of the Federal Water Pollution Control Act.

The bill also provides that prior to the granting of a license that the Secretary shall publish a notice of the proposed facility in the Federal Register along with information as to where the application and supporting documents may be examined.

If substantial objections are raised to the granting of the license, the Secretary may convene public hearings on the application.

The potential environmental consequences which could result from the granting of a license are further addressed by the requirement that the Secretary shall neither grant nor deny a license without the preparation of an environmental impact statement as required by section 102 of the National Evnironmental Policy Act of 1969 (NEPA).

Further, protection of the environment is provided by a provision which extends the laws of the United States, particularly specific provisions of the Federal Water Pollution Control Act and the Clean Air Act, to the operation and use of the deepwater port facility as though such a facility were located in the navigable waters of the United States.

States would not be precluded from imposing more stringent environmental or safety regulations for activities occurring within their jurisdiction.

In summary, Madam Chairman, energy needs of our country will require the increased importation of oil in the immediate future. The best means of facilitating such an increase, from an environmental point of view, are deepwater port facilities.

The bill which we are proposing facilitates the development of such terminals under a system of strict environmental and other controls.

Madam Chairman, we want to make it clear that some crude oil will always be imported in small tankers. For example, in 1900, the estimated oil brought in by tankers was 13,500 barrels spilled.

In 1980, assuming that oil import enters by supertankers using a deepwater port, the estimated oil spill during a year will be 14,550 barrels. This is much less than would be spilled if existing ports and small tankers were used, but more than that which is now being spilled and, of course, the amount spilled could expand each year after 1980.

Fortunately, a deepwater port can be designed to reduce the threat of oil spills even more.

Another point, Madam Chairman, the Coast Guard has estimated the incremental cost per barrel as about a penny if a port is moved 10 miles further out to sea.

However, the sum of all of these observations is that we strongly support the development of offshore deepwater ports.

We think that several factors are critcal to control the environmental hazard involved. The first is that they may be as far offshore as possible.

The second is they do not involve dredging.

The third is that the design of the facility itself minimizes the possibility of spills.

I think if all these sorts of measures are taken, we think that offshore ports are desirable from an environmental point of view.

I might mention that our concern is not limited to the marine environment in the area surrounding the port facility, but extends to the environmental consequences that deepwater ports would have, in our view, if the law should permit, and should provide for the protection of the marine coastal and shore environment.

The administration's bill, which we support, is such a comprehensive piece of legislation.

Without going into the details of the administration's bill, I think that perhaps its provision which is most important to us is that the protection of the environment it provided by the provisions which extends the laws of the United States, particularly specific provisions of the Federal Water Pollution Act and the Clean Air Act, and the operation and use of the deepwater port facility as though such a facility were located in the navigable waters of the United States.

In summary, Madam Chairman, we believe that given the sort of safeguards that are built into the administration's bill that the environment can be protected.

This concludes my statement.

The Chairman. Thank you, Mr. Court.

I have some questions, but we will let Mr. DeCain make his statement.

STATEMENT OF HON. VINCENT F. DeCAIN, DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENT, SAFETY, AND CONSUMER AFFAIRS, U.S. DEPARTMENT OF TRANSPORTATION; ACCOMPANIED BY REAR ADM. WILLIAM M. BENKERT, CHIEF, OFFICE OF MARINE ENVIRONMENT AND SYSTEMS, U.S. COAST GUARD

Mr. DeCain. Madam Chairman, members of the committee, I am Vincent F. DeCain, Deputy Assistant Secretary for Environment, Safety, and Consumer Affairs.

With me is Rear Adm. William M. Benkert of the U.S. Coast Guard, Chief of the Office of Marine Environment and Systems.

We appreciate the opportunity to appear before your committee this morning and to testify on behalf of the Department of Transportation in the area of deepwater ports and other offshore facilities, including offshore pipelines.

As you know, there has been a growing Federal interest and support for new legislation that provides for the establishment and regulation of deepwater ports.

This committee is certainly to be commended for conducting these hearings in an effort to resolve all the issues involved.

The Department of Transportation's responsibilities in the development and operation of deepwater ports are manifold.

As Admiral Benkert will point out, superport facilities would necessitate increased Coast Guard involvement; additional navigational aids must be developed and maintained, safety regulations must be enforced, and oil spills alleviated.

The Office of Pipeline Safety within our Department has responsibility for insuring the reliability of pipeline systems from the deepwater port terminal to the shore, to the refinery and ultimately to the consumer.

In light of these responsibilities, and with the knowledge that national transportation needs currently account for about 50 percent of U.S. petroleum consumption, the Department of Transportation is keenly interested in deepwater port issues.

The Department has actively participated in an interagency deepwater port study, the forthcoming CEQ task force on Outer Continental Shelf resource development study, and the Department of the Interior's energy modeling group.

Evaluated against this background, the Department of Transportation prefers the legislative approach to deepwater port problems contained in the administration's bill, H.R. 7501, over that provided by either H.R. 5898 or H.R. 5091.

H.R. 7501 would remove many of the impediments to developing and operating deepwater port facilities by establishing the Department of the Interior as a single point where deepwater port applications could be submitted and accepted.

Under that proposal, the Department of Interior would be required to insure that applicants are financially responsible, that the deepwater port does not unreasonably interfere with international navigation, and that the facility would be located, constructed, and operated in a manner which would minimize or prevent any adverse significant environmental effects.

The Secretary of the Interior is required to consult with the Governor of any State off whose shores a facility is proposed. This is to insure that the operation of the facility and directly related land based activities would be consistent with the State land use program.

The act provides for the Department of the Interior to consult with other Federal agencies and States that this Act shall in no way alter or otherwise affect the jurisdiction of the Council on Environmental Quality or the requirements of the National Environmental Policy Act of 1969.

The administration recognizes the impact that offshore deepwater port development may have upon landside activities. Accordingly, H.R. 5701, the administration's bill, would maintain the individual State's right to regulate and control development currently within its jurisdiction.

As you know, my office also has responsibility for the transportation-related environmental impacts of proposed actions, including offshore developments.

The administration's proposal was designed so that the procedures for consideration of the environmental impact of proposed actions would be compatible with DOT's existing procedures, under the National Environmental Policy Act of 1969.

Since the Department of the Interior, under the administration bill, would have responsibility for carrying out the provisions of the legislation, that Agency would become the lead agency under NEPA, and DOT's role would be that of consulting to the lead agency on matters within our special expertise or jurisdiction.

The U.S. Coast Guard would be one component within DOT that would be knowledgeable regarding the impact of actions in the offshore marine environment.

And, of course, our Office of Pipeline Safety may also contribute to the consideration of particular aspects that fall within its jurisdiction.

There are several other environmental aspects of these facilities in which DOT would have an interest. Some offshore development may have an impact on land use, including transportation facilities such as highways or terminals or other distribution systems.

One of DOT's administrations may be expected to provide Federal program assistance for projects to serve land development.

Environmental impacts attributable to these projects would be considered early in the process of soliciting DOT assistance. This process is consistent with the administration bill.

I would like to cover briefly the Department's responsibility relating to pipelines located offshore, that is, the pipelines transporting the oil from these deepwater ports to shore facilities.

The Department of Transportation (DOT) jurisdiction over offshore liquid pipelines derives essentially from the Transporation of Explosives Act (18 U.S.C 831–835), as amended by the Department of Transportation Act (49 U.S.C. 1651 et seq.).

Under these statutes, the DOT has authority to establish regulations for the safe transportation of hazardous materials, petroleum, and petroleum products by pipeline in offshore areas.

Such regulations are binding on those carriers engaged in interstate or foreign commerce.

In addition to the DOT's responsibility cited above, the DOT has a significant responsibility in the anti-pollution area relating to water quality in the navigable waters of the United States.

I might just emphasize by way of summary that although the DOT has safety responsibility and authority over offshore transportation-related facilities, both in the navigable waters within the States' boundaries and on the OCS, it has an interface for non-transportation related oil facilities with the Environmental Protection Agency in the navigable waters and with the Department of the Interior on the OCS.

DOT safety regulations implementing the statutory authority for the transportation of hazardous materials, petroleum, and petroleum products were developed primarily for pipelines on land.

However, they are applicable with certain pro forma modifications to offshore pipelines.

The DOT, through its Office of Pipeline Safety, is now actively working in conjunction with the EPA to develop the regulations required under the Water Pollution Control Act of 1972 for the prevention of oil discharge in the navigable waters of the United States.

At the same time, the Department is working with the Department of the Interior to develop uniform standards which will not only provide for pipeline safety but also meet the interior requirements for prevention of waste and conservation of natural resources of the OCS.

To the extent that deepwater ports will be involved with handling liquified natural gas (LNG), the DOT has jurisdiction over the transportation of such gas by pipeline under the authority of the Natural Gas Pipeline Safety Act of 1964 (49 U.S.C. 1671 et seq.).

Madam Chairman, the foregoing cites some of the Department's activities which will be affected by the operation and development of offshore deepwater port facilities.

In our opinion, H.R. 7501 contains sufficient procedural safeguards to assure that the authority of this Department to conduct its activities would suffer no impairment.

This completes my prepared statement.

I will be happy to answer any questions which you or the members of your committee may have.

The Chairman. Thank you, Mr. DeCain.

I am sure you know that this committee has to take responsibility if we are going to have to consider the type of tankers and so forth to bring oil either into offshore ports or into our harbors. And I was just talking to counsel about analyzing the three responsibilities, both of our committee, the Interior Committee and the Public Works Committee. Each has fields in which it has certain responsibilities so that we all have to be sure they are taken care of in a bill that may come out in the end.

We have not, as yet, analyzed all of the bills to see how they might dovetail, but we do have some questions to ask you.

Now, Admiral, if you will give your statement, then we will start the questioning.

Admiral Benkert. Madam Chairman and members of the committee, I am Rear Admiral W. M. Benkert, Chief, Office of Marine Environment and Systems, U.S. Coast Guard.

I am pleased to appear before you today to discuss Coast Guard views of our possible responsibilities regarding deepwater port development and operations off the costs of the United States.

Both H.R. 5091 and H.R. 5898, as well as other proposals including H.R. 7501, are under consideration by the Congress. The Coast Guard and the Department of Transportation together are submitting detailed comments on H.R. 5091 and H.R. 5898 to the committee, and I shall not attempt to review these comments at this time.

As you are well aware, the Coast Guard is the primary maritime law enforcement agency of the Federal Government.

The Coast Guard programs within the ports of the United States include such activities as maritime law enforcement, merchant vessel safety, port safety, aids to navigation, and marine environmental protection, as well as search and rescue. All these programs have been established in response to legislative action.

Most recently, with the enactment of the Ports and Waterways Safety Act of 1972 (Public Law 92–340) and the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92–500) and ensuing delegations, many responsibilities of the Coast Guard in the port safety, merchant vessel safety, and marine environment protection areas have been additionally clarified and expanded.

Appropriate regulations have been or are being developed in each program area after effective maritime industry and port community consultations and associated public hearing processes have been completed.

The current Coast Guard budgetary request has recognized these increasing program requirements.

While I have no comments to make regarding the question of overall United States jurisdiction over the development of deepwater ports or the agency or department which will have administrative jurisdiction of this development, I feel that the Coast Guard responsibilities in any deepwater port area should be very similar to those currently existing in our Nation's ports.

As the Federal agency primarily responsible for maritime law enforcement, merchant vessel safety, port safety, and marine environment protection, the Coast Guard should be among the Federal agencies which are consulted by the agency or department having administrative jurisdiction of the development of deepwater ports.

We feel this is essential in the area of site selection as it affects any special navigational requirements or impacts on existing navigational routes.

Additionally, to minimize the possibility of any spillage during cargo transfer operations, the transfer systems and their intended operation are of special interest to the Coast Guard.

Thank you for the opportunity to appear here.

The Chairman. Thank you, Admiral.

Let me ask a few questions. I will pose them first to Mr. Court, and if either of you other two gentlemen have anything to respond, I would be happy to have you do so.

You know, Mr. Court, I am curious and concerned. You mentioned, I think on page 4, about the further out these ports are, the less chance there is of damage.

Can these kinds of deep offshore ports stand the weather, the winds, and the seas without real damage?

I am not thinking of the transfer of the oil into or out of the storage tanks.

Can they really stand these rough seas?

Mr. Court. Well, I believe they would be constructed in areas where they could stand the stress, and that may seem to be evading your question.

I think, first of all, the technology, the way in which superports are constructed, is changing so that they are becoming more flexible, so they have been built in rougher seas and can survive.

Second, I assume that any group constructing a superport would be very careful in their consideration of what the weather and the operation of the oceans would do. That is, you would not build one where it would be vulnerable to disruption.

The Chairman. Have we any in existence now that are 20 and 30 miles offshore?

Admiral Benkert. Might I answer that?

The Chairman. Yes.

Admiral Benkert. If I could expand just a little bit on what Mr. Court said.

There are in existence today a number of offshore ports, if you want to call a single point mooring or multiple point mooring as an installation as being an offshore port, which we do.

The experience has been with these installations that they can withstand just about any kind of weather as far as the installation is concerned.

There are some of them, certain weather conditions existing which would at that time prohibit the tankers, for example, from being secured to them at that particular time, but there are, at the present time, over 100 single point moorings in existence offshore today throughout the world.

The Chairman. Far out?

Admiral Benkert. Some of them are, yes, ma'am.

The Chairman. And they are weathering the seas?

Admiral Benkert. Yes, ma'am, these types of installations have proven to be very satisfactory, generally speaking. And there are certain of them that when the weather conditions are poor they just do not moor the tankers to them.

The Chairman. That is understood, but I was thinking of the seas.

Mr. Court, if legislation is passed establishing a permit system for offshore ports and terminals, what laws presently administered by EPA should be extended to such structures, and why should they be applicable?

If you cannot give a full answer, would you give it later?

Mr. COURT. I believe the two principal laws are the Clean Air Act and the Federal Water Pollution Control Act.

I think these two bills would provide strong authority for dealing with the emissions of the port itself.

The CHAIRMAN. That is the present authority for EPA right now, the two laws you mentioned?

Mr. COURT. We do have other pieces of legislation, but those are the most significant.

The CHAIRMAN. What is the present EPA authority, if any, over activities on the Outer Continental Shelf beyond the territorial jurisdiction of the United States?

[The following was supplied in addition to the above:]

The laws presently administered by EPA which would be extended to deepwater ports are the Clean Air Act, the Federal Water Pollution Control Act, and the Marine Protection, Research and Sanctuaries Act. Such authority should be extended so that any deepwater port facility which is licensed will be considered, for environmental control purposes, as though it were situated within the United States.

Mr. COURT. We do not have the authority underneath that act, I do not think.

The CHAIRMAN. Mr. de Cain, do you have that authority?

Mr. DECAIN. I do not believe we have any authority beyond the 3-mile limit at the present time.

Admiral BENKERT. The FWPCA, certain aspects of it, apply out through the territorial jurisdiction, Madam Chairman.

The CHAIRMAN. My understanding was that the Environmental Protection Agency did have, or rather the Department of Transportation does have that authority.

Admiral BENKERT. We have certain authorities on the Outer Continental Shelf under the Outer Continental Shelf Lands Act, and we have certain authorities under the territorial seas under the Federal Water Pollution Act.

Mr. COURT. Through the combination of the Federal Water Pollution Control Act and the ocean dumping bill, we have pretty effective authority all the way out. It is overlapping authority within the 3-mile limit. I think both bills cover it.

The CHAIRMAN. And your authorities are really entwined, are they not, the Coast Guard and the Department of Transportation, EPA, and the Corps of Engineers?

Mr. COURT. I think our relationships with the Coast Guard are that we are the standard setting and the permit authority for the actual enforcing. We have set rather but a belated authority.

The CHAIRMAN. I do not think we are quite satisfied with those answers, and I wonder when you get your transcript if all of you would dig into it, that particular question, and find out just what those authorities are?

Let me ask the Coast Guard. In the administration's proposal for offshore ports and terminals there is an extensive list of statutes which are declared to be applicable to deepwater port facilities. Included are various statutes administered by the Coast Guard, including the Port and Waterways Safety Act, the Loadline Act, the

Bridge to Bridge Radio Telephone Act, and the Federal Boat Safety Act.

How do you envision that these acts would be applicable to offshore terminals?

I am going to ask you, since I have to abide by the 5-minute rule, to answer that latter for the record so we do have that in the record.

Admiral BENKERT. Yes, ma'am.

The CHAIRMAN. And one further question you can answer later.

Are there any other laws administered by the Coast Guard which would be applicable to offshore terminals, for example, the Dangerous Cargo Act, 46 U.S.C. 170, and the Tank Vessel Act, 46 U.S.C. 391a?

Answer that for us for the record, and I would appreciate it.

The other thing that you can answer for the record, Admiral, would be: What is the budgetary effect for the Coast Guard for the additional duties that would be entailed?

Admiral BENKERT. I can answer that one right now. If the Congress expected the Coast Guard to enforce our laws, and our activities, which we now conduct within our jurisdiction on our ports and tanker operations, and so forth, within the continental limits of the United States, if we were expected to do this at offshore ports depending on what types of ports you had, I would say that we would need additional resources to accomplish this properly.

The CHAIRMAN. Thank you. And you will supply the answers to the previous questions I asked you for the record?

Admiral BENKERT. Yes, ma'am.

[The information follows:]

COAST GUARD JURISDICTION OF DEEPWATER PORTS

Laws administered by the Coast Guard which could be expected to require involvement in the development and operation of Deepwater Port Facilities include the following:

(1) Relating to port security, port safety, and environmental quality including anchorages, traffic management and vessel control:

i. Section 7 of the Act of March 4, 1915, as amended, 33 U.S.C. 471
ii. The Act of Sept. 15, 1922, as amended, 33 U.S.C. 472
iii. Title I of Public Law 92-340, 33 U.S.C.A. 1221 et seq.
iv. Title II of the Act of June 15, 1917, as amended, 50 U.S.C. 191
v. Public Law 92-63, 33 U.S.C.A. 1201 et seq.

(2) Relating to the discharge of oil and hazardous substances, regulation of marine sanitation devices, and regulation of material handling:

i. Section 311 and 312 of Public Law 92-500, 33 U.S.C.A. 1321 and 1322
ii. The Act of August 30, 1961, as amended, 33 U.S.C. 1001 et seq.
iii. Title I of Public Law 92-532, 33 U.S.C.A. 1401 et seq.

(3) Relating to the establishment and regulation of aids to navigation, structure and obstruction marking and other signals:

i. 14 U.S.C.81.
ii. 14 U.S.C. 83.
iii. 14 U.S.C. 84.
iv. 14 U.S.C. 85.
v. 14 U.S.C. 86.
vi. Section 15 of the Act of March 3, 1899, 33 U.S.C. 409.

(4) Relating to marine inspection, marine casualty investigation, the carriage of dangerous cargo, and vessel safety and manning:

i. Title 52 of the Revised Statutes of the United States and statutes amendatory and supplemental thereto (this would include, but not be limited to, R.S. 4417a, as amended, 46 U.S.C. 391a; Public Law 92-75, 46

U.S.C.A. 1451 et seq.; and sections 10 through 13 of the Act of June 20, 1874, as amended, section 15 of the Act of March 4, 1915, as amended, sections 1 and 2 of the Act of September 4, 1870, 33 U.S.C. 361 through 368)

ii. Title 53 of the Revised Statutes of the United States and statutes amendatory and supplemental thereto.

(5) Relating to the establishment and regulation of loadlines for vessels:
  i. The Act of March 2, 1929, as amended, 46 U.S.C. 85 et seq.
  ii. The Act of August 27, 1935, as amended, 46 U.S.C. 88 et seq.
(6) Relating to the enforcement of the laws of the United States:
  i. 14 U.S.C. 89.
(7) Relating to the saving of life and property:
  i. 14 U.S.C. 88.

The CHAIRMAN. Mr. Forsythe?

Mr. FORSYTHE. Thank you, Madam Chairman.

Mr. Court, I believe you expressed a concern about the wetlands, and the need for this legislation for their protection.

Would the Coastal Zone Management bill fit into this picture?

Do you think it can carry a great bit of the protection load?

Mr. COURT. I think it could, yes.

Mr. FORSYTHE. Thank you.

Admiral, you referred to 100 deepwater ports around the world.

Admiral BENKERT. Of that one particular type, sir, single point mooring.

Mr. FORSYTHE. Where are the majority of these ports?

Admiral BENKERT. There are some in the North Seas, sir, the majority of them at the present time are located in the Far East in Japan and the Persian Gulf area. The Persian Gulf area has quite a few.

Mr. FORSYTHE. When it comes to the question of the disposal of the adverse weather problem there are locations where the adverse weather is perhaps as bad as we would suppose ours would be at such locations?

Admiral BENKERT. Yes, sir.

Mr. FORSYTHE. I would like to come back to the question I asked earlier, the technology on the transfer of oil.

Do you believe that we have the technology for assuring the transfer from a deepwater transfer point with safety?

Admiral BENKERT. Yes, sir.

Mr. FORSYTHE. With respect to the technology on the large tankers, what is needed here to assure that we are not going to trade the problem of a lot of small spills for the problems of a major spill?

Admiral BENKERT. I think if you are discussing a tanker design, if that is your question, sir, I think that particularly at the present time this is most appropriate.

Title 2 of the Ports and Waterways Safety Act, which we have mentioned before, basically requires the Coast Guard to examine just this subject, tanker design from the point of view of the environmental protection afforded in that tanker design.

We are examining this very closely now under the terms of that bill. We are presenting positions to the international community through the forthcoming International Convention for Prevention of Pollution of the Seas, in which our position is one of presenting design characteristics to the Convention, looking toward, shall we say, a better design of these vessels from an environmental protection point of view.

We are also looking at such things as the maneuverability of these vessels, their stopping characteristics, and other facets, looking toward the implementation of possible design requirements on the vessels under the terms of the Ports and Waterways Safety Act, sir.

Mr. FORSYTHE. Assuming that something was actually coming into being within the next 3 to 5 years, would you be prepared with the technology to assure that we would be able to put it together as far as the safety is concerned?

Admiral BENKERT. I think as far as design of vessels is concerned as a result of this forthcoming International Convention, which is coming out this October, I think there will be certain requirements on an international basis placed on certain tank vessels from a design point of view, environmentally.

I think that in line again with the Ports and Waterways Safety Act, that if these design characteristics are not forthcoming internationally, the U.S. position as voiced in the legislation has been one of an attempt to proceed unilaterally in this field.

Mr. FORSYTHE. Do you feel the tankers are going to be environmentally safe.

Admiral BENKERT. Yes, that is one of the intents of the legislation.

One other facet of the bill that is important is the concept of freedom of vessel traffic systems for our waters.

In this legislation which the administration has presented here, the way I read it and understand it, the fact of saying in the legislation that the Ports and Waterways Safety Act would apply to offshore terminals, the Coast Guard would then have the authority to implement such things as traffic systems, if you will, in the vicinity of an offshore port, which I think is very pertinent to the subject here, and I have mentioned that in my statement, sir.

Mr. FORSYTHE. Thank you, Admiral.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Dingell?

Mr. DINGELL. Thank you, Madam Chairman.

Admiral, you made the comment that the deepwater ports are very satisfactory, generally speaking.

I find that to be somewhat of a contradiction. It indicates to me that you have some reservations with regard to the safety, adequacy and satisfactory performance of these deepwater ports.

Would you want to address yourself to what those reservations might be, please, admiral?

Admiral BENKERT. My reservations, sir, would be purely personal.

Mr. DINGELL. Let me hear your personal views, then.

Admiral BENKERT. I do believe that the concept of the single point moorings is an excellent one, and has proven to be very fine throughout the world wherever they have been used to date.

I personally have some feeling that the construction of large fixed structures, which conceptionally have been envisioned at the present time, I personally have some feeling that this type of offshore structure may not be worth the money or the effort, and may present some problems.

Mr. DINGELL. What problems would they present?

Admiral BENKERT. Well, I think some of the problems, sir, are in relation to the weather conditions that may exist in particular locales.

I do not think this type of installation perhaps is too appropriate for some locales, depending on the sea conditions.

Mr. DINGELL. Would you please address yourself to the locales, the weather, and other problems, and the bad results that would flow from this, if you please?

Admiral BENKERT. I cannot be too specific, sir.

Mr. DINGELL. You are doing better than most people have done so far, admiral.

Admiral BENKERT. Well, I feel, for example, that in the North Atlantic, as an area, and again this is purely a sailor's point of view——

Mr. DINGELL. I think that is something that has not been well enough heard inside the administration.

The administration has tried to put this into other Congressional committees, where a sailor's view appears to be rather novell.

If you proceed to assist us you might assist somebody else who needs it.

Admiral BENKERT. I feel that certain areas of the North Atlantic Ocean, if you were going to build a fixed structure offshore, that this might present some problems.

Mr. DINGELL. What you are saying is you might have a fixed wreck there very shortly thereafter?

Admiral BENKERT. I did not say that, sir, you did.

Mr. DINGELL. That is my assumption, am I correct?

Admiral BENKERT. I think it presents some problems with not necessarily the structure itself, but with ship manueverability in relation to the structure, and with times when you could use this structure, sir, for mooring vessels.

Mr. DINGELL. In mid-winter the North Atlantic is not a good place to put a fixed structure, is it?

Admiral BENKERT. We have had some unhappy experiences.

Mr. DINGELL. Let me direct this question if I may, please, to the gentlemen from EPA.

Have you had any consultations between EPA and the Coast Guard with matters now under discussion between the Admiral and I?

Mr. COURT. Yes, we have both been involved.

Mr. DINGELL. That does not respond to the question. I asked have you had any discussions with them regarding the particular problem of safety, and the types of structures to be used, and so forth, with regard to the Coast Guard?

Mr. COURT. I have not consulted with him personally, but our organizations have.

Mr. DINGELL. Have they?

Mr. COURT. Yes.

Mr. DINGELL. Are those involved in an environmental impact statement? Was any similar document submitted to Congress in connection with any of the legislation now pending before the Congress in this committee or elsewhere?

Mr. Court. Well, we have made rather exhaustive a series of studies that are a matter of public record, and certainly could, or have been made available to this committee.

Mr. Dingell. Have you filed an environmental impact statement on this with the Congress?

Mr. Court. We have not.

Mr. Dingell. The law does say you should.

Mr. Court. Pardon me?

Mr. Dingell. The law does say that, in submission of legislation having a significant effect on the human environment, the administration is supposed to submit an environmental impact statement.

My question is, has such an environmental statement been submitted?

Mr. Court. No.

Mr. Dingell. Inform me why not.

Mr. Court. Because we thought adequate provision was made and, in fact, in the provision of the administration's bill that each port proposal shall be subject to environmental impact statement process.

Mr. Dingell. That is not what the law says, though.

Does your Agency choose the laws that you shall obey and comply with and see that they are carried out? I am trying to get some help from you people.

I have had some problem with the application of laws by EPA. EPA seems to be very good at picking and choosing and very poor at carrying out.

Would you state to me the precise policy of your Agency with regard to laws to be carried out?

Do you carry out all laws, or pick and choose?

Mr. Court. We certainly intend to carry out all laws.

Mr. Dingell. Then please inform me why no environmental impact statement has been submitted in connection with the legislation involved.

Mr. Court. An environmental impact statemment on H.R. 7501 has not been prepared by EPA because we are not the lead agency with regard to that piece of legislation. It is a Department of the Interior bill and Interior has prepared a statement which will be filed and transmitted to the Congress.

I might add, Mr. Dingell, that EPA has prepared on environmental impact statement on all legislative proposals which we have submitted to the Congress this year. I am referring to the bills which relate to hazardous wastes, safe drinking water, toxic substances, and sediment control.

Mr. Dingell. I think I have used up my 5 minutes, Madam Chairman.

The Chairman. Mr. Cohen?

Mr. Cohen. Thank you, Madam Chairman.

Mr. Court, as I understand your testimony, what you are suggesting is that part of the difficulties for environmental protection is tied up in traffic control, and the thesis is if we reduce traffic the hazard is thereby reduced. Is that correct in terms of the controlling movement, and the question I was raising, if that is the principal case, then why is there a need for a double bottom on the supertanker?

Mr. COURT. I think the past history has been that about half of the oil spills have occurred through collisions or groundings, and half again. Twenty-five percent of the total has occurred through groundings as opposed to collisions.

The two critical requirements for offshore ports are double bottoms, and some sort of strict radar navigational control.

Mr. COHEN. But if you move your offshore facility out further and further, as you are suggesting, there really would not be that compelling need, would there?

Mr. COURT. No.

Mr. COHEN. I am not saying I am not in favor of them, but the question I am trying to get at is, there has been testimony before this committee that if other countries, such as Canada, do not require double bottom ships, then any economic benefit to be derived from having refineries constructed on the east coast or west coast would be substantially reduced, if not eliminated.

I wonder if you had any input about that, Admiral Benkert?

Admiral BENKERT. Might I assist in the answer to that? This double bottom concept for tankers, I think you have to look at this in the context in which it has been put forth.

What has been put forth on double bottoms for tanker vessels has been the result of a rather extensive study looking primarily at the incidental discharge of oil by ocean-going tank vessels in the process of tank cleaning, primarily.

As a result of this study, what this joint Maritime Administration-Coast Guard study developed was that the answer to this seemed to be that the construction of tankers with segregated ballast systems was the way to go.

Now, when you construct a tanker with segregated ballast systems, meaning separation of your cargo from your ballast, when you construct a tanker in this manner, one way of doing this is by constructing the vessel with double bottoms, the double bottoms to hold ballast rather than cargo, and the idea behind this joint segregated ballast, double bottom concept, is that at the same time you are eliminating the mixture of oil and water, the concept of tank cleaning you are also adding to the safety of the vessel environmentally insofar as if the vessel does ground, and you have a double bottom which has ballast water in it, you are not going to dump oil, just water.

This is the rationale for double bottom segregated ballast type tankers.

Mr. COHEN. Mr. Court, can you tell us why we have not moved in the area more swiftly at least in traffic control, of vessel traffic systems?

It seems to me you mentioned the figure, what 500 tanker collisions was throughout the world.

How many of those occurred near our shores?

Mr. COURT. I think the Coast Guard can answer that.

Admiral BENKERT. I would have to give you that for the record, sir.

Mr. COHEN. If you would, please.

(The information follows:)

TANKER COLLISIONS NEAR U.S. COASTLINE

From the latest worldwide statistics, during 1969 and 1970, there were 44 collisions involving a tanker within 50 miles of the U.S. coastline. Not all of these involved pollution incidents.

Mr. COHEN. Could you tell us why we have to wait until we have the approval of a superport or supertanker before we move into these systems?

Admiral BENKERT. I do not think that is correct. We are in the traffic system business right now.

We have again, going back to the Ports and Waterways Safety Act, the Coast Guard was empowered to develop vessel traffic systems for port areas.

We have done this in San Francisco Bay. We have an operating system. We have an operating system in Puget Sound.

We are also installing a system in the Houston-Galveston area, and we have plans for traffic systems in other areas progressively during the next several years.

Mr. COHEN. Would it be fair to say, or draw the inference from your statement that a majority or a good portion of the tanker collisions throughout the world do not occur on our coastlines?

Admiral BENKERT. I would say we have had our share of them, sir, probably proportionately depending on the volume of traffic.

We have had our share.

Mr. COHEN. Despite our efforts in vessel control, traffic control?

Admiral BENKERT. Our efforts in traffic control are of a very recent nature, sir.

Mr. COHEN. And you would advocate that we move despite whatever takes place with respect to deepwater ports within this area?

Admiral BENKERT. Yes, sir.

Mr. COHEN. Thank you, Madam Chairman.

The CHAIRMAN. Mr. Metcalfe?

Mr. METCALFE. Thank you, Madam Chairman.

Mr. Court, in your statement you referred to the inshore sites.

Now, for my distinguished colleagues, as they have been talking about different possible locations for these deepwater ports, have all been in deepwater, and oceans involving the perimeter of the United States.

What do you mean by inshore sites? Is there any consideration at all given to establishing these deepwater ports inland? I am talking about the Great Lakes, for instance, or is it because of the shallowness of the water?

Mr. COURT. I meant in coastal bays or estuarine areas; in other words, for instance, Delaware Bay is a case in point. Within the bay itself where where you might face particular difficulties.

I was not really referring to inland in the sense of being within the continental United States.

Mr. METCALFE. Well, would you say I am correct in my thinking that no consideration is being given nor can be given to putting a deepwater port within, say, the Great Lakes area because of the lack of depth of water and distance from shore?

Mr. COURT. I believe that is correct.

Mr. METCALFE. In other words, no consideration is given to the inland waters.

Mr. COURT. I do not think it is precluded but, on the other hand, I think we have been looking mostly to the coastal areas.

Mr. DINGELL. Will the gentleman yield?

Mr. METCALFE. Yes.

Mr. DINGELL. Is there not a difference in the situation with regard to deepwater ports in the Great Lakes area and on the high seas, because under the laws of the United States, the bottoms of the Great Lakes belongs to and is controlled by the States and by the Federal Government, so that, under existing law, it is necessary that there be: (a) a Federal permit under the 1899 Act for changes of this kind, and (b) if the State law so requires, that there be also a concurrent State permit for the action required by State law whereas, in areas outside the 3-mile limit, there is no requirement for the application of the 1899 Act, nor is there any jurisdiction at this minute in the States except insofar as is conferred upon them by the tidelands giveaway of some years ago: is that right?

Mr. COURT. I think that is probably correct.

Mr. DINGELL. That is my recollection.

I thank the gentleman for yielding.

Mr. METCALFE. Thank you.

I would like to address this remark to Admiral Benkert.

Mr. Court indicated in his statement, and it was alluded to by Congressman Cohen in regard to the figures that were cited for the 500 tankers in collision throughout the world, and that is in the last 10 years, 80 percent of these collisions occurred while the tankers were entering or leaving a harbor. And most of them involved oil spills.

It appears to me that as we have been listening to testimony on deepwater ports that we talk about the necessity for getting oil in and the possibility of a shortage, the environmental factors. And here we are talking about 500 tanker collisions.

It is difficult for me to conceive that with all the expertise that has appeared before this committee, and that is existent today, that we would permit that many collisions and that much oil spilled. Not only does it affect the environment but we need that oil that is being spilled as a result of collisions.

My question is, why are we so grossly, and these are my words, negligent in not giving enough thought to the elimination, complete elimination of collisions?

We have navigable laws that control this, and it appears to me from the testimony I have heard that we have used all precaution, and I am amazed and somewhat bewildered that we have these collisions.

Admiral BENKERT. Mr. Metcalfe, our efforts, if I may say so, and obviously we have been looking at safety of vessels for many years under our existing legislation, we have developed a number of rules and regulations as far as the vessels themselves are concerned. We have developed a rather extensive repertoire of regulations dealing with the operation of vessels.

Our record in the United States, as far as tanker collisions are concerned, I feel, are dropping and will be dropping quite extensively.

Mr. METCALFE. What percentage point, if I amy interrupt, does appreciably cover?

Admiral BENKERT. I cannot give you a figure right off the top of my head, sir, but I can tell you this, that going back to our ports and waterways safety legislation, and our bridge-to-bridge radio telephone statute which was passed just last year, I feel that the combination of these two pieces of legislation, when fully implemented, the bridge-to-gridge, for example, is now being fully implemented since January 1, the vessel traffic system concept is only just beginning, sir.

We are at the very early stages.

We feel that these two pieces of legislation particularly will make a great deal of difference in the casualties that will occur in the future.

We have just started to implement this.

Mr. METCALFE. Thank you very much, Admiral. My time has expired, but I think I have conveyed my concern to you, and I appreciate your responses.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Steele?

Mr. STEELE. Thank you, Madam Chairman.

Mr. Court, you said that one-half of the oil spills are a result of collisions or groundings, implying that double bottoms would have prevented these spills in a large number of cases. Is that correct?

Mr. COURT. I think they would have alleviated the spills from groundings, but not collisions.

Mr. STEELE. I asked the question, because I asked a similar question about 2 weeks ago when we had two witnesses here, one from the Coast Guard and one from the tanker construction industry. And they both said that we do not have any information in this area that is adequate to enable us to make that kind of statement.

The Coast Guard said they would certainly like to have that information, since, obviously, it would provide a very powerful argument for double bottoms. And yet the Coast Guard said they did not have the information, but were working to try to determine in how many cases a double bottom actually would have made a difference in preventing the spill. And the construction industry said there is not one case on recrod.

That is an enormous difference from half of all the groundings and the collisions, and half of all the spills—that is, between the statement that you made and the statement the industry made that they do not have one such example.

The Coast Guard seems to be in the middle by saying they are looking into it.

Mr. COURT. We had numerous examples of where this occurred. This represents a joint CEQ, EPA, and Coast Guard study which came to the conclusion that double bottoms would help to reduce oil spills significantly.

Mr. STEELE. Well, you use a figure of one-half of oil spills—and I think it is extremely important that this committee know what the evidence is, and if there is such evidence, if there is such a study, I think it is important that either you or the Coast Guard, or whoever has done it, whoever has it, submit it for the record.

I would like to ask at this point that the study or information referred to be submitted for the record.

Mr. COURT. Fine.

Mr. STEELE. It is critical to our consideration of this matter.

The Chairman. It will be made part of the record at this point.

[The information follows:]

The results of the Joint Study indicated that one half of the spills from groundings would have been prevented by double bottoms. However, the Coast Guard is the proper agency to interpret the data.

Mr. STEELE. Thank you, Madam Chairman.

The CHAIRMAN. Mr. Studds?

Mr. STUDDS. Thank you, Madam Chairman.

Admiral, are any of the large fixed structures in existence around the world now, or are all the existing facilities single point moorings?

Admiral BENKERT. There are some large fixed structures.

Mr. STUDDS. Are you familiar with any of those?

Admiral BENKERT. I have never visited one, a fixed structure, other than you would call a buoy port, which is in Rotterdam. It is not offshore. It is dredged.

Mr. STUDDS. As you heard earlier, we cannot find anybody who has seen any of these. We have had a procession of witnesses assuring us how safe they are, but nobody has ever seen one.

Admiral BENKERT. I have seen a number of single point moorings, but I have not seen offshore installations because, to my knowledge, and again I would have to check this, the only ones that I am familiar with from reading, looking at pictures, and studying to some extent are those in the Persian Gulf.

The weather conditions there are somewhat different from other locals, and I have not visited them.

Mr. STUDDS. Madam Chairman, the reference in General Kelly's statement was to the A. D. Little report.

Does the committee have that report?

The CHAIRMAN. The committee does have it.

Mr. STUDDS. I sensed a horrendous bureaucratic and jurisdictional nightmare, both in the executive and in the Congress, when Congressman Dingell asked whether you folks had talked.

The problem is that you probably did not talk, but you had an interface.

Mr. DECAIN, you referred to DOT having interface for nontransportation related oil facilities with EPA, and also the Department of the Interior.

By the time you have finished adding up the agencies that you are going to have interface with, it will be a nightmare.

The Chairman said we have many committees of Congress Concerned with this. I sit on two committees that are currently holding hearings on this.

I do not see how the administration and this committee is going to proceed at all, within the Federal Government, as to how we look at it.

Secretary DeCain says superport facilities would necessitate increased Coast Guard involvement. And, Adminiral, we had to fight very hard to restore some funds to the Coast Guard to restore some manpower. And I am wondering if the administration is going to come up here and move in such an area as this to require increased Coast Guard personnel and facilities—and we have some strong feelings on this committee as to how it should be increased, infinitely, infinitely more in other responsibilities.

Do you think you can get through to OMB down there in terms of not cutting your budget? I mean, you might have an interface with them also.

Admiral BENKERT. I simply say, sir, that if the Congress and the administration expect the Coast Guard to do a good solid job in relation to offshore ports, depending on the type of construction they are, where they are located and so forth, I personally cannot fail to see how we would need some additional resources and some additional manpower to do a proper job in the same manner we are trying to do.

Mr. STUDDS. I could not agree with you more. I do not think you have sufficient resources to do the job you have been given.

No further questions. Thank you, Madam Chairman.

The CHAIRMAN. Mr. Kyros?

Mr. KYROS. Thank you, Madam Chairman.

Mr. Court, your testimony mentions, on page 5, the administration's bill which, among other things, would require consultation with the Governor of the State.

The other bill before our committee, H.R. 5898, does not require that sort of consultation.

If you are going to establish a national energy policy, is it feasible to consult State by State to determine where an offshore terminal facility might go?

Mr. COURT. I think in the first place the administration's bill is still stronger. It contains other language that requires the Secretary of Interior to insure that the development of a port is consistent with State land-use programs.

Mr. Kyros, that is a phrase which we think is broader than just applicable State laws.

For instance, land-use planning would be a State program, so I think that, in fact, the administration's bill calls for even more consultation.

Second, to answer your question, it is not certain by any means that the national energy policy can be implemented if all the States have a veto power over it.

On the other hand, I think the administration's position is that given the extent to which individual States will be affected, the administration should go out of its way to try and get superports developed with the consent of the States that are most affected.

If that fails, presumably stronger measures would have to be considered.

Mr. KYROS. Well, what I mean is, does that specifically require consent by the Governor of a State?

Mr. COURT. I think the intent of the administration's bill is to obtain State consent or else not license the superport.

Mr. Kyros. Now, the second point I see here is the administration's bill vests the authority to administer in the Secretary of Interior.

Mr. Court Yes.

Mr. Kryos. Who, I suppose, traditionally has dealt with oil matters.

But we now have set up within the Department of Commerce, NOAA, so why should this not be in Commerce since Commerce deals with the coastlines and NOAA ocean matters?

Mr. Court. From EPA's point of view, I think it could be in either agency, and I think there are arguments for it being in Interior.

Underneath the administration's reorganization plan, which I think was originally going to be submitted this week, the Department of Energy and Natural Resources, the Interior would be given the lead in the energy area, and the superport fits within that responsibility.

They also have experience in offshore leasing, drilling platforms, and so forth, that is not available elsewhere.

Mr. Kyros. What about in those cases where our border is contiguous to Canada and we want to put a facility offshore that goes out 15 to 20 miles?

What problems do we find with those foreign nations, our neighbors?

Mr. Court. Do you mean would the Canadians be willing to accept such a superport?

Mr. Kyros. Precisely, you know the Pittston people have applied for a refinery up in Eastport, Maine, and the Canadians are saying, well, the tankers coming into the refinery will have to traverse Canadian waters. They said that this was a dangerous risk and they have denied access to tankers through Canadian waters.

Have you considered what the effect of such a deepwater port would be on a foreign nation that is our neighbor?

Mr. Court. I think it is possible the Canadians may accept the development of a port there.

From the environmental point of view, the transshipment of oil along the coast would lead to the same conditions that exist today; that is, you would have more smaller tankers in areas that are hard to control, and you might have a number of collisions.

Mr. Kyros. Yes; but in some areas, in some large gulfs, the prevailing current may be such that if we did have some kind of casualty, oil could well be swept into the beach.

Anyway, there is nothing in the bill that deals with that.

Mr. Court. No.

Mr. Kyros. Well, thank you very much.

Thank you, Madam Chairman.

The Chairman. Thank you.

Counsel has a question.

Mr. Heyward. Mr. DeCain, I would like to ask if the Department of Transportation would furnish for the record an analysis of the present statutes which have application to carriage of petroleum products by pipelines.

I have some problems as to exactly what that authority is because, as I read the title 18 section that you referred to on explosives, there is a narrow definition of interstate and foreign commerce in the first place, and there are many provisions in there, limited to carriage by land.

I would appreciate it if the Department could furnish us with a detailed analysis of the statutes presently existing.

Mr. DeCain. We will do that.

Mr. Heyward. You refer to regulations which are binding.

If you could cite those regulations, if there are any covering this areas, we would appreciate it.

Mr. DeCain. Yes, sir, we will do that as well.

[The information follows:]

Current Applicable Pipeline Regulations

Section 834(a) of the Explosives and Other Dangerous Articles Act (18 USC 831–835), as amended by the Department of Transportation Act (49 USC 1651–1659), authorizes the Department of Transportation to ". . . formulate regulations for the safe transportation within the United States of explosives and other dangerous articles, including . . . flammable liquids . . . which shall be binding on all carriers engaged in interstate or foreign commerce which transport . . . dangerous articles by land . . . ." A "carrier" is defined in Section 831 of that Act (as amended in 1965) to mean ". . . any person engaged in the transportation of . . . property by land as a common, contract or private carrier . . . as those terms are used in the Interstate Commerce Act, as amended . . . ." The legislative history of the 1965 amendment to this Section, which deleted the words "other than pipelines" from the definition of a "carrier", states that the purpose of the bill was to restore to the ICC specific statutory authority and responsibility for the safety regulation of all pipelines other than those used for the transmission of water and gas, operating in interstate commerce. (House Report No. 588, 89th Cong., 1st Sess.). The transportation of an article by pipeline located beneath the navigable waters of the United States or located upon the Outer Continental Shelf of the United States is deemed to be transportation by land of that article for purposes of the Explosives and Other Dangerous Articles Act.

Dangerous articles are deemed to be in transportation "within the United States" when they are transported within the "seaward boundary" of each coastal State as defined in Section 1312 of the Submerged Lands Act (43 USC 1301–1315). The net effect of that Act has been to extend the beach three miles so that the transportation by pipeline within the seaward boundary of a State may still be considered as transportation "by land" the same as if the pipeline were located on dry land. In addition, Section 1333(a) of the Outer Continental Shelf Lands Act (43 USC 1331–1343) extends the "Constitution and laws . . . of the United States . . . to the subsoil and seabed of the Outer Continental Shelf and to all artificial islands and fixed structures which may be erected thereon for the purpose of . . . transporting resources therefrom, *to the same extent as if the Outer Continental Shelf were an area of exclusive Federal jurisdiction located within a State . . . .*" (Emphasis supplied)

These Sections serve to extend the applicability of safety regulations promulgated by the Secretary of Transportation pursuant to the authority contained in Section 834(a) of the Explosives and Other Dangerous Materials Act to the limits of the Outer Continental Shelf. The Office of Pipeline Safety under authority delegated to it by the Secretary of Transportation has issued safety regulations relating to the "design, construction testing, operation and maintenance of liquid pipelines and pipeline facilities when located within the limits of the Outer Continental Shelf and utilized by carriers engaged in the transportation of explosives and dangerous articles in interstate or foreign commerce. (49 CFR Part 195).

The Office of Pipeline Safety is also working in conjunction with the EPA to develop regulations designed to prevent oil discharges from pipelines located within the navigable waters of the United States.

The CHAIRMAN. Any other questions?

[No response.]

The CHAIRMAN. Thank you, gentlemen, for helping us. The staff will forward additional questions for your prompt reply. With that, the committee stands in recess until 10 o'clock tomorrow morning.

[The questions submitted to Mr. Court and answers supplied thereto follow:]

EPA RESPONSES TO QUESTIONS ON DEEPWATER PORTS

Question 1. Provide a detailed listing and analysis of all the laws and programs administered by the Environmental Protection Agency which would have impact upon or be affected by enactment of H.R. 7501 or similar legislation. Indicate which, if any, of these laws should be specifically amended, repealed, modified, or expanded in the provisions of such legislation.

Answer. It appears that there are three statutes primarily administered by EPA which would be affected by enactment of H.R. 7501, or similar legislation. They are as follows:

(1) *The Federal Water Pollution Control Act*, 33 U.S.C. 1251 et seq. This statute would apply in its entirety to activities conducted at an offshore "superport," by virtue of the provisions in section 111 of H.R. 7501. Since the first proviso of section 111(b)(1) would empower the Administrator of EPA to act in lieu of, or to waive actions by, the several States; matters like the certifications under section 401 or the permits issued under section 402 of the FWPCA would be handled by the Administrator.

Assuming that refining and processing of oil would not occur in the foreseeable future at a superport, the most salient impact of the provisions of section 111 of H.R. 7501 on operations to be conducted at superports would result from the application of section 311 of the Federal Water Pollution Control Act, which deals with discharges of oil. By virtue of section 111, discharge by a superport of oil in quantities that leave a "visible sheen," etc., as more fully described in 40 CFR, part 110, would subject the owner or operator of the facility to civil liability under section. He would also be subject, of course, to reporting requirements of that section, and to the generally applicable regulations issued under section 311(j)(1) (pertaining to spill prevention and equipment requirements, etc.).

(2) *The Clean Air Act*, 42 U.S.C. § 1857c–6 et seq. Although the Clean Air Act would, by virtue of section 111 of H.R. 7501, be applicable in its entirety to activities undertaken on a superport, there would seem to be no practical effect attending this result, at least as long as there is no industrial activity, such as refining at a superport. If facilities erected on a superport did involve industrial activities, then as H.R. 7501 is presently written, they would be subject to all provisions of the Clean Air Act. Although the application of ambient air quality standards under section 109 and the implementation plan under section 110 of the Clean Air Act to areas where there is no population is without precedent, EPA is concerned that future effects of the diminution of air quality on living organisms may pass through the food chain to the eventual detriment of human health.

(3) *The Marine Protection, Research and Sanctuaries Act of 1972*, P.L. 92–532. It is not clear whether the Ocean Dumping Act would cover the transportation of material from a superport. Section 111(a) of H.R. 7501 states that laws of the United States shall apply to activities connected with the operation and use of superports "in the same manner as if the facilities were located in the navigable waters of the United States."

Applying this language literally, it would seem that the transportation for dumping of material from a superport would be subject to the Ocean Dumping Act, since, if the superport were in fact in the navigable waters of the United States, it would be impossible to posit a situation in which such transportation without a permit did not violate the prohibitions of section 101 of the Ocean Dumping Act.

Question 2. Provide a detailed analysis of exactly what role EPA will play upon enactment of legislation such as H.R. 7501 in terms of federal agency responsibility, interagency coordination, and regulation of construction and operation of the deepwater port facility.

Answer. In addition to the regulatory authority mentioned in response to Question 1, EPA's role, upon enactment of legislation such as H.R. 7501, would include responsibility to comment on environmental impact statements and consulting with the Secretary of the Interior, pursuant to section 104(b) and 104(c), with respect to rules and regulations to be issued and the information required in applications received by him.

Question 3. Assuming enactment of H.R. 7501 or similar legislation, provide a five-year cost estimate of EPA, in terms of monies and personnel, which would be required to implement EPA's responsibilities under the Act.

Answer:

Five-Year Cost Estimate, H.R. 7501, Deepwater Port Facilities Act of 1973

Fiscal year 1974	$250,000
Fiscal year 1975	500,000
Fiscal year 1976	500,000
Fiscal year 1977	500,000
Fiscal year 1978	500,000

The cost of implementing the responsibilities of the Environmental Protection Agency under the proposed legislation is as stated above. This estimate is projected on the basis of approximately 3½ man-years of effort required in each of our seven sea coast regions to review impact statements for proposed facilities, issue discharge permits as required, conduct on-site surveys at site of proposed facilities, and monitor compliance with water pollution and air pollution standards at operating facilities.

Question 4. What specific environmental criteria should be included in the legislation to insure adequate protection of the marine environment? What specific information and actions would EPA require in the context of a permit application in order to properly evaluate the environmental effects of the construction and operation of a deepwater port at the site proposed? Is it contemplated that EPA would issue separate permits under the provisions of other applicable law in addition to the EPA aproval of the permit application for the deepwater port under H.R. 7501 or similar legislation? If so, innumerate (sic) those separate permits.

Answer. The Interim Criteria for Evaluation of Ocean Dumping Permits published in the *Federal Register* on May 16, 1973, would apply for the construction and operation of deepwater port facilities. These also satisfy the requirements of section 403(c) of the FWPCA as amended. Final regulations and criteria will be promulgated in the *Federal Register* in October and will then take precedent.

In addition, two pending International Conventions will have influence on deepwater facilities. These are the Intergovernmental Maritime Consultative Organization Convention which convened in London in October, and the Convention for the Prevention of Marine Pollution by dumping of wastes and other matter. The United States Senate ratified this in August, and when 15 other nations have ratified it, it will come into force. Our domestic regulations and criteria are fully consistent with this Convention.

As to specific information required by EPA for construction and operation of deepwater ports, section 221 of the Interim Regulations for Ocean Dumping explicitly states the material necessary for informed review. Sections 227.62 through 227.65 of the Interim Criteria specify the conditions which must be met for disposal of dredged material. An environmental assessment of the effects of disposal of these materials in a new disposal site would be required. Much of this information would be included in the EIS.

Finally, the Agency does not contemplate the use of additional separate permits at this time.

Question 5. What specific provisions of the Federal Water Pollution Control Act and the Clean Air Act would extend to the construction and operation of deepwater ports.

Answer. All provisions of the FWPCA and the Clean Air Act would extend to the construction and operation of deepwater ports, although some are specified in section 111 of H.R. 7501, apparently for ease of reference.

Question 6. What United States environmental protection laws should and could be extended to foreign-flag vessels utilizing a U.S. deepwater port located on the high seas outside of the U.S. territorial sea and contiguous zone?

Answer. It appears that the question of environmental protection laws applicable to foreign flag vessels on the high seas should be resolved in the context of the renegotiation of the IMCO Convention of this year. Although it is unclear at this time how these negotiations will come out, it would seem reasonable that a superport licensed under H.R. 7501 should be treated, for purposes of operating discharges from tankers, just as a U.S. port would be.

Question 7. What provisions of the Ocean Dumping Act should apply to a deepwater port located on the high seas?

Answer. All provisions of the Ocean Dumping Act should apply to a deepwater port located on the high seas, assuming that the United States has jurisdiction by virtue of H.R. 7501 or similar legislation. The Ocean Dumping Treaty requires, in Article VII(1)(c), that each party" apply the measures required to implement the present Convention to all fixed or floating platforms under its jurisdiction." Although we are unsure how narrow an interpretation this language can tolerate, it would require at a minimum that the United States prohibit dumping by a superport. In addition, it may also require the United States to apply the Ocean Dumping Act to material transported from a superport; and in fact, such jurisdiction would seem to be the necessary outgrowth of section 111 of H.R. 7501. In any event, it would seem that the United States should, in view of Principle 21 of the Stockholm Declaration, control discharges from, or originating at, superports, and the Ocean Dumping Act would appear to be an appropriate mechanism for such control.

Question 8. Would EPA favor or oppose provisions in H.R. 7501 or similar legislation which would provide for increased financial liability to those responsible for an oil spill at a U.S. deepwater port on the high seas, or does EPA feel existing domestic and international levels of liability are adequate to protect the public interest? Provide appropriate rationale for your response. In this context, supply for the record a detailed analysis of the extent and type of liability for all parties involved, including the Federal and State governments, in an oil spill at a deepwater port located within three miles and for one located on the high seas by a foreign-flag vessel and also by a U.S.-flag vessel.

Answer. The Environmental Protection Agency would not oppose increased financial responsility for oil spill cleanup at a U.S. superport if the spill originated from the facility. One should note, however, that the provisions of Section 311(f) of P.L. 92–500 establish a limit of $8 million for oil discharge removal at fixed onshore or offshore facilities. This limit appears reasonable at this time. Several States, e.g. California, Florida, Maine, Maryland, Massachusetts, and Washington, presently do not limit liability for spills occurring within the territorial sea, requiring instead, removal of the discharge to the satisfaction of the State. The concept of total or strict liability is now being challenged in several courts.

The Agency favors increased liability provisions pertaining to vessels. Under section 311(f)(1) of the FWPCA as amended, the owner or operator of a vessel of 300 gross tons or larger has limited liability for discharges in the amount of $100 per gross ton or $14 million whichever is less. These limits apply unless the United States can show that the discharge was the result of willful negligence or willful misconduct within the knowledge and priority of the owner or operator, in which case the owner or operator shall be liable for the full cost of removal. The result of all this is that when we are dealing with ships in the 350 to 500 dwt class the $100 per gross ton limitation is not sufficient coverage.

Beyond the navigable waters of the United States, the liability provisions of the International Convention on Civil Liability for Oil Pollution Damage, 1969, will when it comes into force limit the liability of vessel owners to 2,000 francs ($460.00) for each ton of the ships tonnage or 210 million franks ($46 million) whichever is less, for pollution damage to the territory of a nation including the territorial sea.

Question 9. Is it contemplated by EPA that the recently revised National Oil and Hazardous Substances Pollution Contingency Plan would be applicable to a deepwater port constructed on the high seas? If so, provide reasoning for such extension, to include analysis of applicable domestic and international laws. (See § 1513.3 of the Plan re geographical area of coverage for the Plan.)

Answer. This Agency would expect that the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 1510) would be followed in the event of a spill from an offshore deepwater port. This premise is based upon the following:

1. The National Contingency Plan provides a readymade framework for coordinating Federal agency oil spill removal actions.

2. The Federal agencies primarily concerned with offshore deepwater port facilities, U.S. Department of the Interior, Department of Transportation (USCG), the Department of Commerce (NOAA), the Department of Defense, and EPA are also the primary agencies identified under § 1510.5(p) of the National Contingency Plan. Accordingly, development of a Federal plan to cover spills from offshore terminals would be an unnecessary duplication of effort and expenditure of Federal resources; and

3. There would undoubtedly be instances when spills from offshore terminals would pose a potential threat to the territorial seas, shoreface and shelf-bottom. Hence, the National Contingency Plan could be implemented in accordance with § 1510.3(a). We have reviewed many of the domestic laws and regulations, and international treaties that could bear on this qusetion. We have found none with provisions comparable to Sec. 311(c), P.L. 92–500, which authorizes Federal removai of oil and hazardous substances and directs the preparation and implementation of National Contingency Plan.

Question 10. Provide a detailed analysis of the role which EPA would play, in the context of H.R. 7501 or similar legislation, in relation to the landward side impact surrounding the construction and operation of deepwater ports.

Answer. EPA would again play a review and commenting role in relation to the landward side impact of Federal actions surrounding the construction and operation of deepwater ports. This would include the review and comment on environmental impact statements prepared in connection with Federal projects, grants, loans, licenses, or permits which may be involved in landward development. For example, EPA would review impact statements prepared by the States on their coastal zone management programs under the Coastal Zone Management Act of 1972. In addition, EPA would review and comment on Corps of Engineers' operations and maintenance dredging and permit applications for work in navigable waters which may be required for landward side development. EPA's responsibility under section 309 of the Clean Air Act would provide for review and comment on other matters relating to the duties and responsibilities of the Administrator in connection with landward side impacts.

[Whereupon, at 12:07 p.m., the committee recessed, to reconvene at 10 a.m., Tuesday, June 26, 1973.]

OFFSHORE PORTS AND TERMINALS

TUESDAY, JUNE 26, 1973

House of Representatives
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:10 a.m., in room 1334, Longworth House Office Building, Hon. Leonor K. Sullivan, chairman, presiding.

The Chairman. The committee will come to order.

We are going to get started, and I am sure the other members will come in as soon as they can. I must make an excuse for the Republican side. They are having a conference this morning, so some of them will be delayed.

This is a continuation of our hearing concerning offshore ports and terminals. We, on the committee, are trying to learn all we can, not only of the need, but the possibilities of building these ports, and trying to settle some of our problems on oil imports.

This morning we have three witnesses scheduled, Mr. William B. Read, president, LOOP, Inc., that is the Louisiana Offshore Oil Port; Mr. J. E. Arnold, Phillips Petroleum Co., chairman, SEADOCK Public Affairs Committee; and the Honorable Wallace H. Johnson, Assistant Attorney General of Land and Natural Resources Division, U.S. Department of Justice.

I am going to ask two of you gentlemen to come to the witness table together, you Mr. Read, and you, Mr. Arnold, and when we are through we will hear from you, Mr. Johnson.

Mr. Read and Mr. Arnold, I know you have attached to your statement quite a bit of detail, and we want to hear everything that we possibly can about the problem.

I do not know that you have to read every word, but the entire thing will appear in the record as though you did read it. If you could eliminate as you are reading some of the less important material, and then go on so that we have the full gist of what you are talking about, I would appreciate it.

At this time I recognize Mr. Read.

STATEMENT OF WILLIAM B. READ, PRESIDENT, LOOP INC. (LOUISIANA OFFSHORE OIL PORT)

Mr. Read. My name is William B. Read, and I am appearing this morning in my capacity as president of LOOP Inc.

I would like to thank the members of the committee on Merchant Marine and Fisheries for the opportunity to appear before you and explain our project.

LOOP Inc., with offices in New Orleans, is a corporation formed to design, finance, construct and operate a common carrier deep draft crude oil tanker unloading terminal in Gulf of Mexico waters off the coast of Louisiana.

Formed in October 1972, our 13 stockholders include Ashland Oil, Inc.; Chevron Pipeline Co.; Clark: Exxon Pipeline Co.; Marathon Oil Co.; Murphy Oil Corp.; Shell Oil Co.; Tenneco Oil Co.; Texaco, Inc.; the Toronto Pipe Line Co.; Union Oil Co. of California; Clark Oil and Refining Corp.: the Standard Oil Co. (Ohio); and Texas Eastern Transmission Corp. Additional shareholders may join through the completion of our engineering design.

Our staff of 19 includes 11 professional engineers experienced in the various disciplines involved in the design, installation, and operation of deep draft terminal facilities. We are presently involved in the design phase of our proposed project. Our staff efforts are being complemented by a number of advisory committee composed of representatives of shareholder companies and engineering contractors. We will complete the design work necessary for an application for an offshore oil terminal by the end of this summer.

In this regard, I submit for the record of this hearing a copy of the Louisiana offshore oil port feasibility study completed in June 1972 and presently being updated by our engineering group.

The Chairman. Without objection it will be made a part of the full record. We will have the staff look into that.

[The document referred to follows:]

LOUISIANA OFFSORE OIL PORT FEASIBILITY STUDY

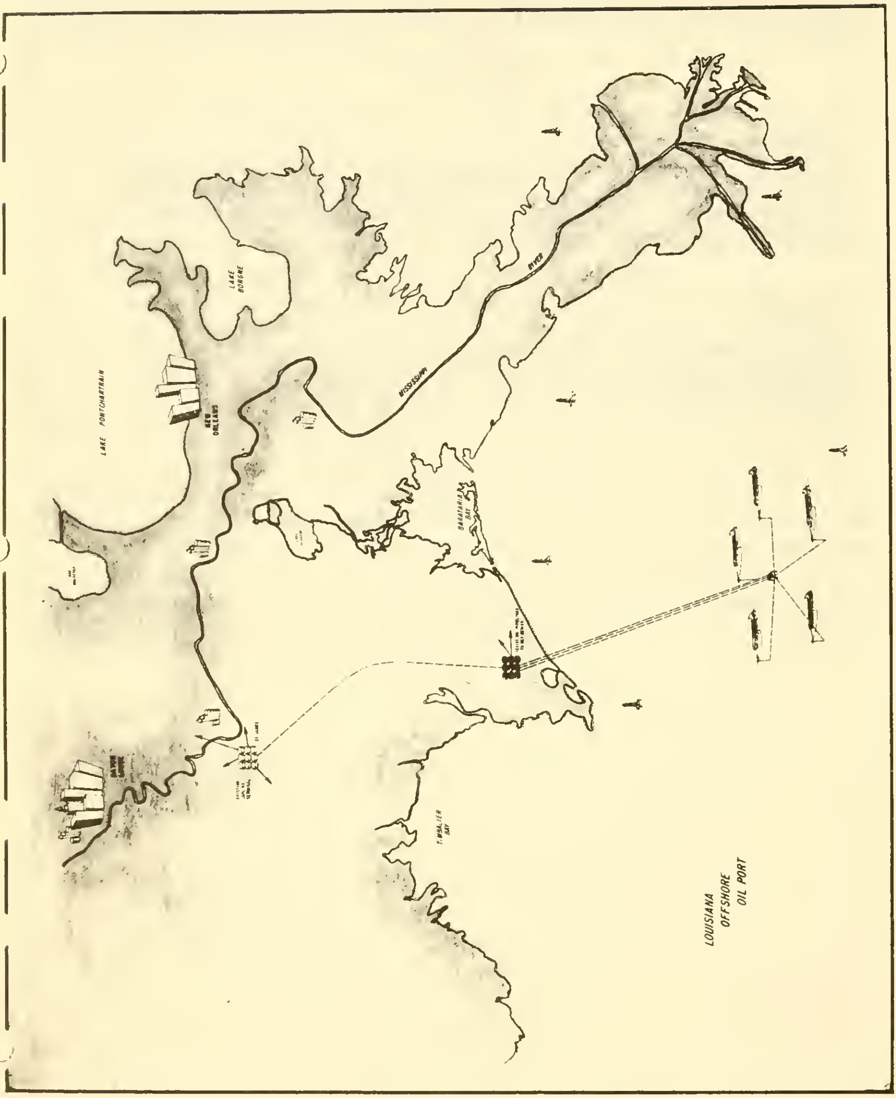
INTRODUCTION

Purpose

On February 1, 1972 a study team was organized and staffed by the companies for the purpose of determining the feasible and economic methods to handle large volumes of future import oil from large tankers into the existing crude oil facilities in Southern Louisiana.

Objectives

The study team was to investigate sites, type facilities, pipeline routes, necessary permits for construction, and to develop investments for various levels of operation.


LAKE PONTCHARTRAIN
NEW ORLEANS
LAKE BORGNE
MISSISSIPPI
RIVER
BARATARIA BAY
BATON ROUGE
TIMBALIER BAY
LOUISIANA
OFFSHORE
OIL PORT

BACKGROUND

The energy forecasts of the oil industry and of Federal agencies show a demand for oil imports of more than 12 million barrels per day by 1985. About 75% of such imports are expected to come from the Eastern Hemisphere, specifically the MIddle East and Africa.

The two major refinery centers of the Gulf Coast, Louisiana and Texas, supply about one-third of the U. S. oil and oil products and will require their share of the imports. The demand of Louisiana area refineries and the large Capline pipeline system to the crude deficit Midwest indicate the need for a large Southern Louisiana terminal for the unloading of tankers.

The most efficient transportation of import oil was considered to be tankers of 200,000 dead weight tons and larger unloaded at a deep water port on the Louisiana Coast with pipeline distribution from the port.

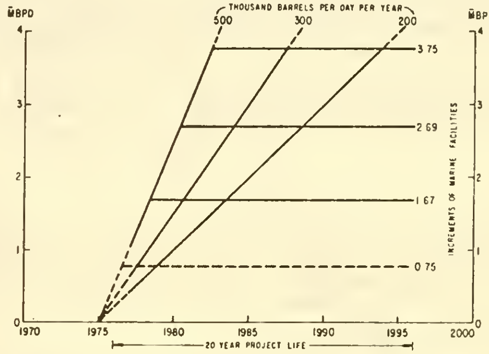
Criteria

The study criteria for a South Louisiana tanker unloading terminal was considered in two parts: the design basis and the economic parameters. The design basis includes the site selections, type facilities and alternate investigations. The economic parameters include the volumes to be throughput and the investment, operating expense and cash flow assumptions.

The design bases were established as:

1. ships of up to 500,000 dead weight tons requiring over 100 feet of water depth to be unloaded at up to 100,000 barrels per hour rates
2. up to eleven different crude segregations for determining required receipt storage
3. the majority of the throughput to be delivered to St. James, Louisiana (75% assumed) and remaining deliveries to be made to other pipelines from the coastal terminal
4. related investigations of loading facilities for ship bunkers and for transhipment to other coastal refinery centers.

The potential throughput of oil volumes were determined from published oil industry and government agency forecasts to be between one and four million barrels per day. This range of potential throughputs was compared to possible project facility increments to establish three primary throughput cases within the range, 1.67, 2.69 and 3.75 million barrels per day. The uncertainties and possible delays of terminals or supply facilities at other coastal locations indicated that the buildup rate of potential throughput might vary from a minimum of 200 thousand barrels per day per year to a maximum of 500 thousand barrels per day per year--the 200 being market growth of Louisiana area refineries and the 500 being market growth of PAD II and III. An intermediate buildup rate of 300 thousand barrels per day per year was included for sensitivity purposes, hence three buildup rates for three potential ultimate throughputs to establish nine possible case comparisons (Appendix 2-1). The nine combinations, as shown below, are expected to encompass the industry outlook of any participating company for the purpose of budget analysis.



The assumptions regarding the study capital investment requirements may be summarized as follows:

1. Engineering, supervision and inspection at 5% of estimates
2. Contingency and working capital at 10% of estimates
3. All equipment to be purchased and owned including marine vessels
4. Escalation at 4% per year from 1972.

CONCLUSIONS

The following paragrpahs regarding site selections, selected facilities, investments, time schedule, organization, permit requirements and related investigations are summary in nature. The details of each are discussed and shown in the individual report sections and the charts of the Appendix.

Site Selection

Sites were considered along the entire eastern Louisiana Coastal area in which the 100 to 120 feet of water depth is within a reasonable distance of the shore from Breton Sound to the east of the Mississippi River to Timbalier Bay on the west. In general, the grant Isle Area offshore site and the LaFourche Parish onshore site were selected by the process of elimination. These sites result in the least environmental effects, the best soil conditions, least navigation hazards and the least overall project cost.

Facilities

Both fixed pier sea island platforms and single point moorings (SPMs) were considered for ship berths, but a study of weather and sea conditions indicated that the only feasible alternative is SPMs. The weather outage of the sea island was estimated to exceed 50% of the time due to high sea conditions.

A platform for booster pumps and receipt meters is required due to the distance offshore. East SPM would be spaced about one mile from the platform and in a circle with one mile between each SPM. It was found that one added SPM can be justified about the number of pipelines to shore; hence, each SPM would be manifolded on the platform to each pipeline to shore.

The optimum size pipelines from the SPMs to the platform and from the platform to the onshore terminal of about 21 miles length were very close between 42" and 48" sizes. This study assumes them to be 48", but this should be examined more closely in the design phase.

The onshore terminal site is approximately 1600 acres. The terms of a four month option and 30 year lease agreement have been agreed to and are being processed. The terminal storage would consist of 54 to 99 five hundred thousand barrel tanks (300' diameter and 40' high) with each four tanks contained in one firewall. Each tank is assumed to have separate tank lines with full drain sumps for complete turnover of separate crude segregations.

The terminal would include receipt and delivery meters, system control building, maintenance facilities, treating and holding ponds for water treating, small boat harbor, fire portection system and necessary power and communications.

The pipeline to St. James of 78 miles will require two pump stations and several delivery stations en route and at St. James. The optimum size pipeline depends on the selected throughput case. The facilities may be summarized as follows for each ultimate volume case:

Case $\overline{M}$BPD	Number SPMs	Number Platforms	48" lines to shore	Number Tanks	St. James Pipeline
1.67	3	2	2	54	42"
2.69	4	2	3	78	48"
3.75	5	3	4	99	54"

The second platform is for crew quarters. The third offshore platform is assumed to be justified from delayed construction and for safety and security reasons to separate the four systems on two equipment platforms in the maximum case.

Investments

The following table summarizes the investment estimates for each of the ultimate throughput cases for both the unloading terminal and the St. James pipeline in 1972 dollars. The buildup rate sensitivities will result in these estimates being spread over a various number of years with the assumed 4% per year escalation resulting in much larger costs at the time of expenditure. These estimates are covered in more detail within the specific sections of this report and the year by year total investments for each case are tabled in Appendix 3-1 and 3-2.

Investments, $\overline{M}$\$	Case, $\overline{M}$BPD		
	1.67	2.69	3.75
Marine - Berths	\$ 9.6	\$12.3	\$15.0
- Pipelines	40.8	60.6	84.1
- Platforms	16.3	20.1	29.1
Terminal - Storage	86.9	126.4	161.0
- Controls & Support	7.8	8.8	10.0
Contingency & Working Capital	16.2	22.8	29.9
Total Marine & Terminal, 1972\$	\$177.6	\$251.0	\$329.1
As Expended	\$207-216	\$301-333	\$407-479
St. James Pipeline	46.4	55.5	68.1
Contingency & Working Capital	4.6	5.6	6.8
Total St. James Pipeline, 1972\$	\$ 51.0	\$ 61.1	\$ 74.9
As Expended	\$58-59	\$70-72	\$87-90
Total LOOP Investment, 1972\$	\$228.6	\$312.1	\$404.0

Organization

It is assumed that the project will either be a separate corporation or an agency operation by a corporate entity, either requiring approximately the same organization. It is further assumed that the design organization will not be delayed by corporate agreements, but that upon budget approval, a nucleus design team will be established immediately from the participating companies. This nucleus should, to the extent possible, include as many personnel as practical which can be permanent employees of the corporation or agency as project management throughout the design, construction and operating phases. It is also assumed that the St. James pipeline will be constructed and operated by the same entity.

The following table shows estimates of the total number of personnel required for each project phase by functional responsibilities. The number required during one phase is not necessarily inclusive of another phase since each phase may require different personnel and talents. Also, the total operating personnel of the three throughput cases are based on the ultimate throughput volumes and may be less in the early years during buildup.

			Operating Case, MBPD		
Function*	Design	Constr.	1.67	2.69	3.75
Management	24	30	28	30	32
Planning	5	4	6	7	8
Employee Relations	5	7	7	8	9
Financial	9	15	18	20	22
Purchasing	5	8	3	3	3
Engineering	39	25	16	17	18
Oil Movements	1	2	4	4	4
Legal Affairs & Tax	4	4	5	5	5
Public Affairs	2	3	3	3	3
Right-of-Way	3	3	2	2	2
General Services	1	2	3	3	3
Operations-Offshore	2	70**	101	120	142
-Onshore	3	60**	57	60	64
Total	103	233	253	282	315

* Includes clerical and secretaries
** Includes operating personnel in training

Permit Requirements

The primary permitting agency for the entire project is expected to be the Department of Interior's Bureau of Land Management rather than the Corp of

Engineers. It seems that they have been given the responsibility of environmental impact statements for all offshore and coastal zone areas in South Louisiana. BLM lawyers have preliminarily indicated that they can adn will take jurisdiction of our port in international waters thereby assuming it to be included in the international agreements regarding natural resources.

Other Federal agencies such as Corp of Engineers, Department of Transportation (Coast Guard), Maritime Affairs and the Environmental Protection Agency would be expected to review and comment on the permit application to BLM.

Several Louisiana agencies would be expected to issue actual permits such as the LaFourche Parish Police Jury, State Land Office and State Highway Department for the crossings of state waters, navigable waters and roads. Other agencies such as State Stream Control Commission, Public Works and the Wildlife & Fisheries would review and comment on the primary permit.

Environmentally, the project can be expected to have problems with the offshore port area from some shrimpers and with the St. James pipeline route regarding new permanent pipeline canals, but the most concern appears to be the dedication, filling and constructing of the large onshore storage terminal in the valuable and unreplaceable coastal marshlands which serve as spawning grounds for sea life. It is expected that the project would not use over one-half of the optioned 1600 acre onshore site and that most environmental objections might be overcome by a thorough study of which portions would have the least undesirable effects. Such environmental studies of all portions of the project should be initiated at the earliest possible date through one or more Louisiana academic groups or individuals.

MARINE

Site Selection

The sites considered for the feasibility study encompass all of the Louisiana coast which is within a reasonable distance of the 90 to 120 foot water depth contours as shown on Appendix 5-1. Beyond this section of the Louisiana coast, to the east or west, these contours diverge from the shoreline at much greater distances.

Site No. 2 is undersirable because of its proximity to oil producing operations, the anticipated difficulty of establishing an access fairway, and the lack of a suitable shore terminal site in the Grand Isle and Barataria Bay areas.

Sites No. 4, near the passes of the Mississippi River, are areas known for their potential mud slides and should be avoided where possible. Although the sites are near the shore line, the lengths of pipelines to a shore terminal site would not be shorter than required at the other sites because of the need to avoid the wildlife and public shooting reserve. Considering the river traffic, there is also potential for traffic congestion.

Thus, the most attractive sites appeared to be Nos. 1 and 3. These were studied in considerable detail and Site No. 1 was deemed the most advantageous in nearly all respects.

McClelland Engineers, Inc. performed office studies of the soil conditions at Site Nos. 1 and 3, both onshore and offshore. These indicated much better conditions at Site No. 1. Onshore soil conditions at Site No. 3 will very possibly restrict tank heights to less than 40 feet whereas tank heights of 40 feet or more appear possible at Site No. 1. Offshore at Site No. 3, it is anticipated that extremely soft clays extend to a depth of 50 to 100 feet below the mud line--a poor condition for pile lateral load design. At Site No. 1, the clays are much stiffer and should present no unusual design considerations.

Based on discussions with A. H. Glenn and Associates, it is apparent that both wave and current conditions will be somewhat more severe at Site No. 3 than at Site No. 1. Site No. 3 is more exposed from the north through the east while Site No. 1 is more exposed from the west and southwest. Since winds from the north through the east quadrant are much more predominant than winds from the west and southwest, the wave conditions will be more severe at Site No. 3. Currents as high as 3-4 knots with possible shear currents have been reported as common at Site No. 3.

Other factors favoring Site No. 1 over Site No. 3 include:

1. shorter pipeline distance to St. James; 78 miles versus 109 miles
2. avoidance of a multiple Mississippi River crossing
3. avoidance of many oyster leases on pipeline route to St. James

4. shorter marine pipelines; 21 miles versus 28 miles
5. commercial fishing interests.

Site No. 3 holds an advantage over Site No. 1 as a transhipment terminal because of its location on the Mississippi River. However, a relative cost comparison of the two sites, considering all the factors, revealed that Site No. 3 would involve added investment costs of 44 and 71 million dollars for the minimum and maximum throughput cases respectively. Thus, for purposes of the feasibility study, Site No. 1 is the basis for facility selection, cost estimates and detailed economics. The specific locations of Site No. 1 offshore and onshore are shown on Appendices 5-2 and 13-1.

Marine Facilities

The marine facilities contemplated include the mooring berths, connecting pipelines to a central booster pump and metering platform and pipelines to shore. The general arrangement and location of these facilities are shown on Appendices 1-1 and 5-3. The primary facilities associated with each throughput case are as follows:

Thruput (Million BPD)	No. Berths	No. Booster Pumps	No. Meter Banks	No. Lines To Shore
1.67	3	3	2	2
2.69	4	4	3	3
3.75	5	6	4	4

The maximum throughputs for each size facility were calculated so as not to incur tanker demurrage value in excess of that which would pay out an added berth and line. For this purpose it was assumed that tankers arrive at random and that the required payout period before taxes would be 6 years. Berth occupancies at these maximum throughputs range from 56 percent in the minimum case to 63% in the maximum case. Berth occupancies are calculated as a function of available berth time after allowing for weather and maintenance outages. The relationship of tanker demurrage value to terminal throughput and facilities is shown on Appendix 6-1 (and 6-2).

In the 3.75 MMBPD case, we have assumed that two booster pump platforms would be desirable to insure reliability of terminal operation by precluding loss of entire capability to receive crude oil in the event of a catastrophic platform fire. There is economic justification for this approach which involves a premium expenditure of approximately $5,000,000 over the single platform concept if the construction of the second platform is delayed by at least three years. It is also thought justified in the high throughput case because of its importance relative to the energy supply of the nation.

The berth, pipeline and platform concepts are described in the following three subsections.

The design criteria and assumptions which were used as a basis for the definition of the marine facilities are listed below:

Tanker Size - Max. 500,000 DWT
Avg. 250,000 DWT

Unloading Rates - 100,000 BPH maximum limited by pumps on tankers. Pressure at ships rail is 125 psig at assumed rate.

Required Water Depth - 100 to 120 feet

Operating Limits vs Type Facility - Fixed sea islands are not useable in seas over 3 1/2 feet. Monobuoys can continue to hold ship in berth and discharge in seas to 15 feet. However, ships cannot complete a mooring operation to a monobuoy in seas over 7 1/2 feet. The latter is the operating limit of mooring launches (apparent concensus of marine experts).

Tanker Port Time - It was assumed that the average tanker would occupy a berth for 30 hours and would discharge to shore for a period of 24 hours.

Maintenance and Repairs - Similarly, it was assumed that berths regardless of type would experience a 10% outage due to routine maintenance and repairs. (This assumption in particular needs further study).

Crude Segregation - There shall be no comingling of tanker cargoes.

Cost Estimate

The estimated capital costs of the marine facilities for each throughput case are shown on Appendix 7-1.

Project Schedule & Contracting

The anticipated minimum time requirements to complete the various offshore facilities from design through installation is shown on Appendix 8-1. Installation of offshore facilities is concentrated in the summer months to avoid incurrence of excessive costs due to weather delays. Based on the lay rate of 48 inch pipe, it is anticipated that only one platform to shore line can be installed per offshore spread during a construction season. For this reason, the schedule indicates the possible need for laying one line in the summer of 1975. It is assumed that detail designs will be necessary for permit application and approval and therefore this item is completed well ahead of the time that it would otherwise be required.

The number of contractors with the capability of laying large diameter pipe and installing large platforms is limited. To assure the best competitive pricing, it is suggested that fabrication and installation of platforms be contracted separately. Potential bidders on fabrication might be Avondale, McDermott, Brown and Root and Moveable Offshore. Installation may be limited to McDermott, Brown and Root and perhaps Moveable Offshore.

BERTHS

The type of berth facilities suitable for the Louisiana Offshore Oil Port is almost entirely a function of the before stated design criteria and assumptions and the prevailing weather and oceanographic conditions. Therefore, a discussion of weather and oceanographic conditions is included in this subsection.

Weather and Oceanographic Conditions

Glenn Study

A. H. Glenn and Associates of New Orleans was retained to provide a study of prevailing weather and oceanographic conditions at the proposed location of the marine berths. The results of this study together with the Operating Limits described under design criteria virtually eliminated all reasonable concepts of berthing facilities other than some type of single point mooring. This can be seen by referring to the Wave Height Summary Chart, Appendix 9-1. Fixed sea islands with a limit of 3 1/2 foot seas would be out of service 58% of the time on an average annual basis, 70% of the time during the average winter months and possibly 100% for a full month every five years. With monobuoys, the maximum full port outage expected to recur every five years in any one month would be 8%. However, in this same month an outage of 35% would be expected in terms of ability to conduct a mooring operation.

For purposes of the feasibility study, the simple monobuoy concept was selected. There are other types of single point moorings which involve rotating platforms to eliminate the long floating hose. These are much more vulnerable to ship damage and their ability to weather a hurricane is subject to question.

Glenn's study also revealed that such other conditions as ocean currents and visibility will not be significant factors in the design or operability of the port. Visibility of less than 1/4 mile is expected less than one percent of the time. Ocean currents will rarely exceed two knots and are generally less than one knot.

Some of the data from Glenn's report most pertinent to operations is included in the Appendix of this report as listed below:

Description	Appendix No.
Table 6: wind speed - direction groups: annual	9-2
Table 12: wave height - direction groups: annual	9-3
Table 13: wave period vs wave height	9-4
Table 14: normal tide characteristics	9-5
Table 23: current speed - direction groups	9-6
Table 25: reduced visibility	9-7
Fig. 1: wind speed: monthly	9-8

Fig. 2: wind direction: monthly 9-9
Fig. 3: wave heights: monthly 9-10
Fig. 4: occurrence of 8 foot waves roughest month in 5 year period 9-11
Fig. 5: occurrence of 15 foot waves roughest month in 5 year period 9-12

The significant wave height given in the tables includes both "sea" and "swell". Significant wave height is defined as the average height of the highest 33 1/3% of the waves observed passing a stationary location during a period of observation of approximately 20 minutes. The height of each individual wave is measured as the vertical height between the top of the wave crest and the bottom of the adjacent wave trough. The significant wave height is approximately equivalent to a visual observers estimate of the average wave height. The higher waves in the wave train are approximately 150% of the significant wave height, but during a long duration observation (1000 waves) the highest wave expected is 186% of the significant wave height. The wave direction is defined as the direction from which the waves approach.

Glenn's report also included considerable data on storm winds, waves and tides which will be useful in final design but are not specifically pertinent to this feasibility study and therefore have not been included in the Appendix.

Weather Regime

The northern Gulf of Mexico lies in the boundary zone between the Northeast Trade Wind Belt of the Tropics and the zone of westerly flow of the middle latitudes. During the summer the area is dominated by the Trade belt and as a consequence the coastal regions experience a nearly constant southerly to easterly flow of humid air onto shore.

During the winter, the belt of tropical air retreats generally southward and masses of cold polar air push southward periodically. Squally weather may accompany the front of the cold air mass and steady rain may develop over portions of the area. Thirty to forty cold fronts can be expected each winter. Fifteen or 20 of these are accompanied by strong northerly winds of 20 knots or more, called "northers". These occur between November and March. From one to six severe northers with winds as high as 60 knots can be expected from December to February.

A typical weather sequence during the winter would be as follows: from two to four days before a cold front passes the area the wind shifts to the southeast quadrant and begins to intensify, perhaps to 15 to 40 knots. With passage of the front, the wind shifts within an hour to a day, through westerly directions, until it is from the north. After a few days, the north wind dies down, veers slowly eastward, and the southeast wind again builds up, thus completing the cycle.

The frequency and intensity of the general wind pattern is reflected in the wave action. During the summer, relatively low wind waves and swell predominate from the south and easterly directions. During the winter, wind waves and swell are also predominant from these directions preceding passage of a cold front, but as the wind veers with frontal passage, wind waves arrive from directions progressing from south through west to north. Wind waves generated by north winds commonly persist for several days until the wind veers through east back to southeast.

The wind waves of greatest height are generated by winds which immediately precede and succeed the frontal passage.

Thunderstorms, Squalls
Glenn's Report

These are localized wind storms associated with cumulus cloud types. They frequently cause short lived strong winds and occasionally cause sufficiently strong winds of long enough duration to constitute an operational problem. These storms occur in all months, although they are most common in the months from March through early October. A typical summer thunderstorm develops winds of 25mph with gusts of 40mph for twenty to forty minutes. However, lines of thunderstorms ("line squall", "squall lines") occasionally develop winds of 60mph for periods of 30 minutes to an hour. Funnel clouds ("tornadoes", "water spouts") occasionally develop over the coast or offshore and may cause winds well in excess of these described above. The average occurrence interval of severe winds in a funnel cloud at an offshore site off the Louisiana Coast is greater than 100 years.

Hurricanes

The hurricane season extends from June through October. Tropical cyclones are classified as hurricanes when sustained wind speeds reach 75 miles per hour. They are classified as tropical storms when wind speeds are in the 40 to 74mph range. The diameter of a hurricane wind system may vary from 100 to 500 miles and the "eye" or calm center may vary from four to 22 miles in diameter.

Wind waves and swell generated by hurricane force winds are known to reach mammoth proportions. A wave height of 74 feet was measured at offshore platforms during hurricane Camille in August 1969.

In his report, Glenn indicates that an average of one hurricane and 1.3 tropical storms per year will occur within 180 nautical miles of the Louisiana coast. In most cases, when a tropical cyclone moves within 180 miles of the Louisiana coast, precautionary measures are taken (evacuation of personnel, movement of floating equipment to sheltered waters, etc.) This data seems to agree relatively well with one company's experience where over a 9 year period there were 20 alerts, 11 of which resulted in shut-in of offshore oil producing facilities. Shut-in periods may range from one to five days with three days being most typical. The Louisiana Offshore Oil Port will experience similar outages as the result of hurricanes and must develop methods and procedures for the securing of facilities and equipment and evacuation of offshore personnel.

SPM Design

As previously stated, the marine berths are monobuoys and may be of either the conventional catenary anchored type or the Esso Single Anchor Leg Type. The costs of each are comparable and therefore the choice does not affect the economics presented in this report.

The location and spacing of the buoys is shown on Appendix 5-3. The spacing criteria of 5000 feet was reviewed and approved by the marine personnel of the various Companies participating in the study. This criteria requires that each monobuoy be 5000 feet distant from any obstruction, whether it be another buoy, a platform or shoal water (100 foot depth contour).

Details of the Single Anchor Leg Mooring (SALM) are shown on Appendix 10-1. This type of mooring is favored by the study team for installation in the Gulf of Mexico. It appears to have more potential resistance to hurricanes than the conventional type because the buoy is smaller, maintains constant tension on the single anchor chain and rides through the waves rather than over them. To accomodate the hurricane seas, the anchorage system for the conventional buoy would have to allow for significant excursion of the buoy and require a long and perhaps unmanageable length of underbuoy hose. The SALM has proven its superior resistance to ship damage because the fluid and anchor swivels and hose connections are near the sea floor.

The cargo hose system at each buoy consists of a single 30 inch diameter hose fitted with two, 20 inch diameter hoses at the end that can be handled by the ship's gear.

A remote controlled valve on the end of the pipeline permits the mooring base and hose system to be isolated. This valve is controlled from the operations platform.

Each buoy is equipped with two mooring lines each fitted with chafing chains, chain support buoys and pickup buoys.

A battery operated light and radar reflector are provided on top of the buoy. Battery operated lights are also spaced along the floating hose.

Navigation

Tankers will approach the coast of Louisiana in the open seas of the Gulf of Mexico until reaching the shipping safety fairways as defined in the Code of Federal Regulations for Navigation and Navigable Waters, Title 33, Chapter

II, Part 209.135. Upon reaching the defined shipping safety fairways, all movements will be between the rhumb lines defining the safe navigable areas. Final approach to the offshore unloading berths and the LOOP anchorage area will be made along a new shipping safety fairway which will extend from the existing Mississippi River southwest safety fairway to the Gulf safety fairways.

Application will be made for the proposed shipping safety fairway and anchorage area under CFR 33, Chpt. II, Parts 209.135 and 209.335. If granted, the following Federal lease blocks in the Grand Isle Area will be affected partially or totally by the modification of the Gulf of Mexico shipping safety fairways and anchorage areas:

Block Numbers

46
53, 54, 56, 57, 58
(See Appendix 5-2) 65, 66, 68, 69
78, 79
80 and 81

The BLM of the Interior Department and mineral lease holders should be contacted upon project budget approval for confirmation of the fairway, anchorage and berth locations.

The fairway, anchorage area and all structures built for the port will be marked and lighted as approved by the United States Coast Guard. The markings and lights shall include warning buoys, anchorage buoys, channel buoys, lights, bells, horns, radar reflectors and radio beacons.

Operations & Maintenance

The marine equipment and manpower necessary to the operation and normal maintenance of the berths and other offshore facilities are shown on Appendix 11-1.

All vessels must be extremely seaworthy craft considering the weather conditions and distance offshore of the facilities. The work boat should be equipped with a 50 ton derrick and winches with sufficient wire to work to depths of 120 feet. One mooring launch is provided for each berth. This will provide for present day practice, wherein two mooring launches are utilized to effect a mooring; one to handle the mooring lines and one to handle the hose strings. A supply work boat is included to assist in general maintenance work. It should be capable of carrying perhaps three, 30 foot lengths of hose. A crew boat is provided for the transfer of shift personnel.

For purpose of the economic analysis contained in this study, it is assumed that the marine equipment is company owned (included in capital cost) and that vessel crews are on the company payroll. The general practice of companies now in offshore oil operations in the Gulf is to lease or charter operated equipment. The choice requires further study, but it should not affect the overall economics.

The total force required for operations is based on a 12 hour shift cycle of seven days on and seven days off. It is assumed that the maintenance force is primarily a day shift cycle. It is assumed that the average onboard time per ship for mooring masters is 40 hours. Thus, for a normal work schedule, a mooring master will handle one ship per week. Allowing for vacations, training, and sickness the mooring master will handle 46 ships per year. In determining the number of mooring masters required for a given throughput it is assumed that the average cargo size is 1,850,000 bbls.

It is assumed that the following maintenance procedure will be followed:

1. Each monobuoy will be removed through the fluid swivel, taken ashore for inspection and maintenance and reinstalled every two years on a regularly scheduled basis.
2. Normal hose replacement of four sections per year per buoy.
3. Hose loss of 50% per hurrican hite and a probability per year of 0.45 of a hurricane hit.

Particular attention needs to be given in design to develop the utmost in hurricane resistance of the monobuoy facility to minimize these maintenance expenses. Items which might be studied include:

1. Possibility of coiling the hose around the buoy or developing an offshore facility for reeling or otherwise securing the hose prior to hurricanes.
2. Possible advantage of using float/sink hose.
3. Removal of hose to a sheltered area on shore.
4. Use a shorter hose and permit bow loading only. This requires outfitting all the tankers for bow loading at one to five hundred thousand dollars per tanker depending on fittings during initial construction.

Spill Controls

Prevention of spills is the primary and most important form of control. This is a function of design as well as operating and maintenance practices. The suggested mode of operations is such that the hose will be left full of water and pressurized when not in use. The pressure in the hose will be monitored to allow the detection of leaks promptly, and preclude the possibility of putting oil into a faulty hose system. Furthermore, should a leak develop in the hose system when the mooring is not in service, the leak will be water and not oil. The above is accomplished by the tanker displacing the hose system with water on completion of cargo delivery. The next tanker initiates cargo delivery in the normal manner, pushing the water into the terminal tankage. This amount of water represents less than 0.06% of the average size cargo.

During deliveries the hose system is inspected frequently, with launches and divers on hand in the immediate vicinity at all times to effect needed action. A complement of divers is included in the permanent operating organization to perform regularly scheduled inspections and maintenance on each monobuoy installation.

Terminal marine equipment will include spill containment booms, skimming devices, and dispersion agents of the most advanced type. These are not defined in this study because of the strides being made today in this field. Today's choices will probably be obsolete by the time this terminal is readied for operation.

MARINE PIPELINES

General

The marine pipelines include the pipelines from the SPM berths to the operations platform and from the operations platform to the shore terminal. Design flow rate of each pipeline is 100,000 BPH (from design criteria) and therefore the economic line size is relatively independent of terminal throughput. Terminal throughput determines the number of lines, not the size.

Based on a present worth analysis covering 20 years of operation at a discount rate of 10%, the economic line size is 48" for each unloading system.

With this line size, the pumps onboard ship can discharge at a rate of 40,000 to 50,000 BPH in case the pumps on the platform are inoperable. This situation could arise if the gas supply were interrupted due to production problems or gas pipeline failure.

Based on recommendations provided by three pipeline contracting firms, the pipe is API 5LX-60 with a wall thickness of 0.500 inches onshore and in shallow water, increasing to 0.562 and 0.625 inches with increasing water depth. The laying stresses are the determining factor in the selection of pipe for these lines. If a different specific gravity is selected in the final design, the pipe specification may change. One-eighth inch of wall thickness reduction result in a savings of approximately $13 per foot.

The pipelines have a corrosion protection coating plus a concrete weight coating which produce a specific gravity of 1.15 in sea water while empty. This appears to be a practical design for a crude oil pipeline. However, this should be studied and evaluated in detail during the design phase of the project as the potential savings are great but the risks of laying a light line are also great.

Internal epoxy lining is provided in all the marine pipelines because of the certainty that there will be quantities of sea water in the lines at various times. Since the lines are operated intermittently, this would allow the sea water to settle out and cause internal corrosion if the pipe were not internally coated.

External cathodic protection is provided on all lines by using zinc anode bracelets on 1000 foot spacing which will provide for a 40-year design life.

New line pipe inspection is also recommended and the cost included in the estimates. At this time, the magnetic particle inspection covering 100% of both the inside and outside surfaces of the pipe would be the system used to detect flaws in the pipe that was not or could not be detected by normal visual mill inspection. By the time this project is constructed, new procedures may be available. This type of inspection is used in an attempt to prevent a failure of the line during the pressure test. The cost to replace one defective joint during pressure testing could exceed the total cost of the new line pipe inspection. Multiple failures could cost millions of dollars and could delay the start of the use of the facilities.

The construction season for this large diameter pipe is June through August. This fact may be the controlling factor in the total project schedule as this will be the last item of construction because of riser installations at the platform.

SPM to Operations Platform Pipelines

Each SPM is connected to the pump platform by a 48 inch pipeline that is approximately one mile in length. A bottom manifold is installed at the SPM for hose connections, isolation and to provide a means to run scrapers, spheres and internal line inspection equipment. A scraper trap is installed on the riser at the platform to receive the scrapers, spheres and internal inspection equipment. These lines are installed in 100 feet to 120 feet of water and all equipment is ANSI 150.

Investment cost estimate totals for each line including Engineering, Inspection, Supervision, Contingencies and cost of working capital is 2.1 million dollars.

Operations Platform to Onshore Terminal Pipeline

The route of the operations platform to the onshore terminal lines starts in Block 46 of the Grand Isle Area and goes between the Block 41 and the Block 47 oil fields and then bypasses the Bay Marchand field to the east before coming onshore to the terminal site. The route selection considered both length of line and potential interference with existing oil operations and facilities. It was not practical to route the line through the Bay Marchand field, which was the shortest route, due to the excessive number of existing line crossings and the hazard of anchor damage to the existing pipelines during the construction of the new lines. The length of each line from the platform to the onshore terminal is approximately 21 miles.

The route will involve the crossing of three known pipelines offshore; namely two CAGC 12 inch lines and one Humble 10 inch line. Onshore there are three known crossings; namely, two Gulf 12 inch lines and one Cal-ky 20 inch line. For purposes of the estimate, it was assumed that there will be a total of six crossings offshore ans six crossings onshore to allow for unmapped flow lines, etc.

Investment cost estimate total for each line including Engineering, Inspection, Supervision, Contingencies and cost of working capital is 20.3 million dollars.

Cost Estimates

Pipe prices were obtained from U. S. Steel companies and were based on API 51X-60 pipe. If U. S. pipe of 46 inch diameter or larger is to be purchased, it will require two years of lead time to install the necessary facilities to make the pipe.

Three pipeline contracting firms provided construction cost estimates. The average of the cost estimates were used in the detailed pipeline estimates. Estimated costs of corrosion protection coating and concrete coating were obtained from a large pipeline coating firm.

PLATFORMS

General

Because of the 21 mile distance offshore, booster pumps on the lines to shore are clearly the economic choice as opposed to extremely large lines required with only the ships pumps. Thus a booster pump platform is required. In addition, the platform serves as a center of operations for the marine facilities, allows manifolding of berths to a lesser number of lines to shore and the installation of meters for leak detection. The platform facilities include an operations platform or platforms and a quarters platform as described in the following paragraphs.

The tentative size and general arrangement of these platforms is shown on Appendix 12-1.

Operations Platforms

The operations platforms are double deck structures with pumping units and operations building on the upper deck and pump manifolding, meter banks and prover and auxiliary facilities on the lower deck. One pumping unit is provided for each line to shore plus one spare. The pumps are driven by 19,000 horsepower gas turbines of the regenerative type. The turbines are enclosed in a building equipped with overhead cranes for onsite maintenance. The meter banks are located on the suction side of the pumps, one for each outgoing line. Each bank contains three 20 inch turbine meters. A common prover is provided on each operations platform. Meters and proving facilities are identical to the onshore installation and are described in more detail in the Terminal Section of this report. The general arrangement of oil piping on the platform is shown on Appendix 12-2. The pipe manifolding is such as to allow any meter bank to be used on any incoming line and the choice of two pumps on each outgoing line to shore.

In the maximum throughput case, the two operations platforms are interconnected with suction and discharge oil lines to allow full use of the spare pumping unit on either platform if one platform were to lose all pumping capability.

Other operations platform facilities include:

Operations Building	- housing control room, switchgear, power generation, maintenance shop parts storage and miscellaneous utilities
Pedestal Crane	- 25 to 50 ton
Fire Protection System	- Water deluge and chemical as appropriate. Totally enclosed areas are equipped with gas and flame detection devices where warranted.

Emergency Fuel Supply - For marine equipment
Safety Equipment
Cathodic Protection

Quarters Platform

The necessary personnel quarters are placed on a separate small platform to provide for personnel safety and comfort away from the big machinery with its inherent sound levels and vibration. The quarters are liberally sized for 24 men to allow ample space for transient types, whether they be Company personnel or government inspectors, customs agents, etc. Other facilities on the quarters platform include a heliport, pedestal crane, fresh water supply, sanitary waste treatment plant, emergency power generation, and fire protection system and equipment.

Control System

The primary marine platform controls are an integral part of the central terminal control room located onshore. The criteria and components of the control system are described in the Terminal Control section.

The local controls on the platform are to provide secondary operational capabilities and will be utilized as necessary to maintain and test equipment at the platform. The platform control capability will be located in a control room ideally situated for equipment surveillance and emergency operations.

In addition to the local controls for the movement of crude oil from ship to shore, the platform control room will have a weather station capable of recording data such as ambient temperature, water temperature, humidity, barometric pressure, rain, wind speed and direction, wave heights and direction, and ocean currents and direction.

The platform controls will include all necessary equipment for providing emergency power, emergency shutdown systems, and fire extinguishing systems to protect the personnel and equipment housed over the water.

Energy Supply

Energy supply for the offshore platform is anticipated to be natural gas from existing pipeline systems located near the port facilities. Consumption for the platform will not exceed an annual average of 3 MMSCFD for the minimum crude throughput case of 1.67 MMBBLS/day nor 6 MMSCFD for the maximum crude throughput case of 3.75 MMBBLS/day.

It is expected that natural gas will be made available from new wells that will be completed in the near future or it will be allocated from Interstate pools due to the national importance of these port facilities.

Should there be any question as to a reliable gas source, consideration should be given to electric power and to crude oil as the primary energy sources for the offshore platform. Soon after project approval and the selected throughput case, efforts should begin to secure a reliable gas supply.

TERMINAL

Terminal Site Selection

The Terminal site and pipeline routes were tentatively selected using U. S. Geological Survey maps. A helicopter and ground reconnaissance survey was then made to further evaluate the site and route selection. A visit to the Oyster Commission in New Orleans revealed this area had only one major oyster lease and it was located in the northeast corner of the proposed property and could be avoided.

Several terminal sites were considered in conjunction with a companion offshore site as discussed in the site selection of the Marine Section of this report. The selected terminal site is located in the southern part of LaFourche Parish and is owned or jointly owned in large blocks by the Louisiana Land & Exploration Company and the City of New Orleans. The southern boundary of this property is located about 1.5 miles north of Bay Champagne (Appendix 13-1).

McClelland Engineers, Inc. was retained to study the area from available data to determine the anticipated soil conditions for tank foundation construction and general fill condition requirements. McClelland's conclusions were that tanks of 40 foot height or more can probably be constructed within this area on prepared pads. Depending on the amount of overlying marsh deposits, incremental water preloading may or may not be required in this area. Generally, the attractiveness of this site, the existence of shallow and thick sands, has been confirmed by the Greater LaFourche Port Commission and two dredging contractors who have recently worked for the Commission in this area.

Mr. Irvin Melancon, Jr., General Manager of the LaFourche Port Commission, indicates that Bayou Moreau will no longer be navigable and may even be filled. It could serve as pipeline canal and could be used for a drainage and holding pond on southern portion of terminal. Mr. Melancon also indicated, with his knowledge of the area, that the lower half of the acreage outlined would, in his opinion, offer the best soil conditions in the entire area being considered. He suggested that we should not go below the upper end of Bay Tartellon because it is permanent spawning waters and because of the oil operations to the east of Bay Tartellon and north of Bay Champagne.

In review of the terminal area with Dr. St. Amant, Assistant Director of Wildlife & Fisheries, he objected strongly to sand fill of any permanent water areas which are spawning grounds. This is the case in the northeast portion of the original property considered. We therefore recommend the northeast corner not be considered for Terminal site preparation.

Before advance development plans for this area are formulated, actual soil conditions within the development area need to be investigated by a carefully planned foundation exploration program. Data from an investigation of this type would provide a basis for specific tank foundation design.

This area, in all respects, appears to pose the least problems environmentalwise. This should be especially true for the western portion of the site of about 300 acres which was held and released by the Greater LaFourche Port Commission and supposedly, already zoned for industrial use.

Site Preparation

The preparation of the proposed tank farm and terminal facilities site in regard to costs for filling in this area and feasible tank foundations requirements has been discussed with two consultant Engineer firms; McClelland Engineers and Pyburn & Odum.

It has been suggested that sand fill be used to fill approximately six feet over the entire area required in a one time operation since this would be the most economical approach. It has been their experience in this area to have approximately two feet of subsidence on a six foot fill which would leave four feet of firm fill.

In regard to tank foundations, it was suggested that tank pads would have a combination of sand and shell fill and would be constructed on the preload and settling concept. It is their opinion that pile support for tank foundations in this area is not necessary.

They were of the opinion that $1/yd. for sand fill by dredging method via pipeline to the site was a very conservative figure but suggested we use this at the present time and add to the cost of the tankage $60,000 for preparation of each tank pad which should be sufficient for this feasibility study. The cost per acre for preparation is estimated at $10,000.

The site preparation is expected to take 18 to 22 months. Since construction is assumed to begin six months after permit approvals, it will be necessary to begin this site preparation 12 to 16 months prior to expected permit approval. Since this specific site filling is expected to be the one most sensitive environmental concern, it may not be possible to start such fill until final permit approvals which would delay the construction schedule by at least one year. The suggested schedule assumes that fill of such private property will be possible without permits and at worst such fill could begin early on the portion of the site which was released by the Port Commission.

Facilities

A brief description of facilities located within the onshore terminal are as follows:

1. Tank farm complex - Meter facilities for measurement of receipts

from the offshore platform. These meters would be of the same type and design as those on the platform.

Each tank is sized at 500,000 barrels capacity. Tanks will have floating roofs and sump bottom design for "pump out" operations. Each tank will be equipped with four variable angle mixers to prevent BS & W buildup.

Booster pumps will be provided to maintain sufficient suction to delivery units.

Transfer system will be provided at the central manifold.

Fire protection equipment will be provided as required.

Cathodic protection for tanks and lines will be provided.

Meters on outgoing pipelines from the terminal will be of the same type and design as the incoming meters insofar as practical.

2. Controls - Centralized control center located in the terminal office building for supervisory control of all operations.

Computer for application of controls.

Audio/visual communication.

3. Support - Office building - This building will house the centralized control center for all oil movement control and offices for supervisors and support personnel.

Warehouse building - All necessary warehouse items and material will be located in this building. All necessary maintenance shops will be located within the confines of the warehouse.

Sample House - Will contain all necessary equipment to obtain the required crude sample data.

Marine Warehouse - All necessary items for marine use such as hoses, ropes, lines, rigging loft, and other marine storage. All necessary marine work shops will be located within this warehouse. Divers supplies and gear will be stored.

Small Boat Harbor - This harbor should have sufficient dock space to permit launches to take on supplies and handle personnel transportation. In addition to launch service, it will be necessary to provide dock space with heavy hoist equipment to move heavy material on work barges. It will be necessary to supply all launches and work boats with fuel at the dock area.

Treating Facilities - Providing necessary drains to separator facilities with two disposal wells for injection of waste water.

Terminal Investment

The storage investment in 1972 dollars for tankage, tank fittings and terminal site preparation is shown year by year for each case in Appendix 14-1. The investments for communications, controls, power, metering and support facilities are shown in Appendix 14-2.

The cost per barrel for tankage used in this study has been calculated as follows:

	Case, MBPD		
	1.67	2.69	3.75
1-500Mbbl 300' X 40' (GATX Quote)	$1.50	$1.50	$1.50
Painting and coating	.20	.20	.20
Mixers and Valve	.10	.10	.10
Cathodic Protection & Misc.	.10	.10	.10
Site Preparation	.33	.33	.33
Tank Lines & Valves	.83	.86	.87
Supervision, Engineering & Insp. @ 5%	.15	.15	.15
TOTAL	$3.21	$3.24	$3.25

The Terminal will operate on a 24 hour basis with shifts of 8 hours each for terminal operators, R & D gaugers, machinist, and electricians. All other Terminal employees will work 8 hours on day shift only. It is assumed that schedulers, programmers and supervisors will be subject to call-out in the event of necessity.

LaFourche Parish

The proposed LOOP terminal site is in LaFourche Parish which is located in South Central Louisiana on the Gulf Coast. LaFourche Parish is 981 land square miles rising from sea level to elevation of 15 feet at Thibodaux, Louisiana, the Parish Seat. Other important towns of the Parish include Raceland, Lockport, LaRose, Galliano and Golden Meadow. These towns and the majority of the remaining population are congregated along the banks of LaFourche Bayou which traverses the Parish from North to South.

The 1970 census indicates that there are 68,941 in the Parish with 41% located in urban areas, 52% classified as rural non-farming and the remaining 7% as rural farming. Inhabitants are primarily of French Acadian descent with most natives being bilingual. Approximately 11% of the population is non-white.

Primary industries include sugar, rice, cattle, seafood, oil and gas production, boat building, trapping and lumbering. The 1970 work force totalled approximately 19,025 persons under the following categories:

Unemployed	- 675	Utilities	- 2325
Manufacturing	- 2075	Services	- 1875
Trade Crafts	- 2875	Mining	- 1675
Government	- 2175	Other	- 4100
Agriculture	- 1250		

The median income for families is $4,330 per year with 31% of the families receiving less than $3,000, 61% receiving between $3,000 and $10,000 and 8% receiving greater than $10,000 per year. Most families own their own home, with very few renting or living in apartments. Most rented dwellings are available in Thibodaux.

There are 31 public schools, 8 parochial schools and one university located in the Parish. Most public schools average about 20 students per teacher. The average annual expenditure for public education is $710 per student registration.

There are two towns in adjacent parishes which contribute heavily to LaFourche Parish; these are Houma in Terrebonne Parish, and Grand Isle in Jefferson Parish.

Major metropolitan areas nearest to the terminal site are New Orleans; 91 miles distant and Baton Rouge, 142 miles away.

A table of pertinent data on LaFourche Parish is given in Appendix 13-2.

STORAGE

Required Tankage

The TAL method of calculating terminal tankage has been used with slight modifications. Listed below are the assumptions and calculations used to determine the required tankage at various BPD throughput (Appendix 15-1).

1. Assumptions
   - a) ship size average at 250 MDWT
   - b) 11 grades for segregation
   - c) 5 day cargo advance and 5 day cargo delay
   - d) swing factor of 50%
   - e) tankage utilization factor of 95%
   - f) tankage will be designed for "pumpout" operation
2. Calculation Example (based on 1,000 MBPD volume)
   - a) Determine capacity requirements for days advance/delay

     10 days X 1,000 MBPD = 10,000 Mbbls
   - b) Total Segregation

     11 grades X Average ship cargo = 19,200 Mbbls
   - c) Swing factor of 50% is used

     19,200 M X .50 = 9,600 Mbbls
   - d) Subtotal - Advance/Delay and Segregation Requirements

     (a) + (c) = 10,000 + 9,600 = 19,600 Mbbls
   - e) Divide by utilization factor of .95

     19,600 M ÷ .95 = 20,632 Mbbls
   - f) Total tankage required

     11 segregations = 20,632 Mbbls

Each tank is assumed to be sized at 500Mbbls capacity with a common suction and filling line for each tank. All tanks will have floating roofs and sump bottom for pump out operation with each tank equipped with four variable angle mixers to maintain clean bottoms.

Necessary booster pumps will be provided to maintain sufficient suction pressure to main line units.

A transfer system will be provided at the central manifold to provide flexibility in utilizing the tank farm for crude segregation.

Fire protection equipment will be provided in the tank farm along with cathodic protection for each tank and line.

All tank farm lines will be coated internally for corrosion protection. As illustrated by the chart in Appendix 15-2, it will reduce acreage requirements by grouping four tanks in one fire wall. Assuming four foot fire walls, it will require approximately five acres for each tank. Site preparation for tankage is expensive and tank spacing should be as close as practical and still comply with NFPA local and state regulations.

The stock swing that will occur in a five day advance and five day delay of cargoes is shown in Appendix 15-3. This graph represents a 45 day schedule with no interruptions on the pipeline delivery system. A throughput rate of 3,750MBPD was used in this illustration and indicates approximately one day stock on hand in the delay case and one day room available in the advance case.

Several schedules have been calculated at various daily throughput rates with the same curve reactions on stock position.

Consideration should be given to having the minimum batch set at 500Mbbls to fully utilize tankage and permit tank "swing" for other grades. The maximum time allowed for a cargo to remain in the terminal should be six days. If more time is required, additional tankage will have to be constructed for holding storage purposes.

In the event that shipper owners could reduce the number of grade segregations from 11 to 5, this would reduce the tankage requirements by approximately 26% and would result in a considerable savings in investment and cost to this project.

CONTROL & COMMUNICATION SYSTEM

General

A centralized communication and control system for operation of the marine facilities, the terminal and delivery pipelines will be installed at Terminal site in LaFourche Parish. The control system will be designed for proper operation of all facilities under any expected contingency.

Integrated operation of all facilities at the terminal control room will be achieved by use of remote monitoring and telemetry of variables through a supervisory control system that provides functions which include controls, records, indications, alarms, logs and displays.

The conceptual design provides for sufficient selective supervisory control and automatic indication of remote units by electronic means to minimize operational manning of the facilities. A system for local control is included to meet expected operational contingencies and for routine maintenance and testing. Control investment is shown in Appendix 14-2.

Design Criteria

The fundamental criteria utilized for the conceptual design of the communications and control system for this project are as follows:

1. Dispatching and supervisory control are to be located in shore terminal control room.
2. Controls to minimize operating and maintenance personnel for offshore facilities.
3. Controls to be for unattended booster pump stations along onshore pipelines.
4. Controls to minimize outside operating personnel at tank farm terminal site.
5. All supervisory controls and telemetering to be adaptable to computer control.
6. Controls to be designed to maintain operation if telemetering and/or computer are interrupted.
7. Controls and communication to be compatible with Capline operation.

The components required to meet the control criteria include the following:

1. Conventional and automated instruments
2. Reliable telemetering - microwave communication system
3. Centralized control room
4. Mimic/status displays
5. Integrated control console

6. Computer
7. Alpha-numeric cathode ray tubes
8. Audio/visual communications

Instrumentation

Instrument measurements and control equipment are to utilize components that have proven successful in operation of comparable remotely operated pipeline systems. However, this basic premise should not preclude the use of new designs and innovations that can be shown to be reliable and an asset to the overall control of this facility.

Appendix 16 lists important variables used in sizing and estimating the control system. It is not complete and it is recognized that additional variables and controls may be required for operation of the major facilities as well as auxillary systems which will support operations.

A simplified instrument diagram is shown in Appendix 17-1.

Custody Transfer and System Security

It is anticipated that custody transfer measurements of receipts will be on the offshore platform and custody transfer measurements of deliveries will take place at the exit end of all pipelines owned and operated by the Louisiana Offshore Oil Port. Delivery custody transfer measurements will be made at St. James (Capline) and at all transfer points to local pipelines.

Basic system security is to be provided by the latest developments of volume in-volume out techniques, utilizing the custody transfer meters and check meters on the opposite ends of the pipelines.

Meters

For flow rates in the 100,000 bbls/hour range, the conventional positive displacement meter is at a serious disadvantage. Only two manufacturers have large PD meters. Both have 16" meters rated at 12,500 b/h and one has built only one 24" meter rated at 25,000 b/h. Their recommendation is the 16" size which requires a bank of at least 8 meters if no spares were included. These meters are bulky and would require 9 to 10 foot spacing. Although the overall length required for a turbine meter run is longer, the PD meters would require much more space, more valves and manifolding and more maintenance.

Turbine meters are finding much greater acceptance in handling crude oils. An early trouble was in so-called grass (hay, fibre waste, excelsior, etc.) accumulating on the blades. Recent strainer developments have helped eliminate this problem. Other objections have been change of meter factor when handling the more viscous crudes. This occurs when flow rate varies widely and is less troublesome when using a bank of meters in parallel where individual meters to be taken off stream as flow rate falls thus keeping the rate higher through the onstream meters.

Some of the advantages of turbine meters over PD meters are:

1. Fewer meters required saves valves and fittings.
2. Less total space required.
3. Only one moving part, the rotor, less maintenance.
4. Medium to fine solids pass through with no damage.
5. Better able to stand overspeeds.

Turbine meters are available in sizes up through 24". Maximum normal flow range is usually taken as the point where pressure drop through the meter is four psi. The disadvantage of the largest meters is in the extra large four-way valve and prover loop needed. For our use, it appears that banks of three 20" or four 16" meters on each 100,000 bbl/hr. line would be best.

Receiving meter facilities on the platform and ashore will be identical. Control valves on the meter discharge manifold will keep the flow through all meters equal. Meter proving will be automated and done on each ship receipt as soon as practical. By the use of factor computing counters and temperature compensators, flow is read directly in net corrected barrels.

Once the newly laid lines are cleaned up, the strainers on the platform will be much more critical than those ashore. Platform strainers will either be oversized or manifolded so that any one may be isolated and cleaned without taking a meter out of service.

On the pipelines leaving the terminal, the meters will also be identical with the other meters insofar as practical.

A fair number of large turbine meter installations are in service or under construction in Saudi Arabia, Kharg Island, Dubai, Nigeria, etc. One of these, for example, has eight 20" meters for a 336,000 b/h capacity. Another has ten 18" meters with 340,000 b/h capacity.

Leak Detection

Continued monitoring of each section of the entire system must be done to insure early detection of any troubles.

Between the tanker and the offshore pipeline is probably the most vulnerable area, as well as the most difficult to monitor. Visual inspection of hose, connections, etc. will be made at regular close intervals. Several other methods of detecting leaks are under investigation.

One such method involves infra red light which works very well under ideal conditions, however, with tankers and hose connections a mile or so from the platform, any infra red scanner mounted on the platform would be handicapped by the very small angle of incidence even if mounted on a 250 foot tower.

Another method with more promise being developed correlates the instantaneous flow rate with the pressure drop between the ship's rail and the platform. Although the unloading pumps will vary from ship to ship and will be variable speed drive, the mile or so of hose and pipe to the platform has a definite hydraulic characteristic. Thus, for any given flow rate on any given grade of oil, the pressure drop should be constant and calculable. A computer would be armed with data obtained by calculation and experience and would be programmed to alarm when the pressure drop was too high compared to the flow being metered on the platform at that instant.

The disadvantage of the above method is the need for continuous wireless transmission of a pressure related signal from the ship to the platform. However, such a transmitter could be built and would be carried aboard each time a ship came in. It could either be battery operated or plugged into ships power source.

Still another leak detecting system under development uses short halflife isotopes. This particular system also presents the disadvantage of having to carry equipment and materials aboard each ship.

From the offshore platform to the onshore tank farm is a distance of 21 miles. Here we will have up to four separate parallel pipeline systems, each of large diameter, and operating on an intermittent basis.

When these lines are shut down, they will be packed to some reasonable pressure--for example, 150 psi and monitored for pressure drop taking into account temperature change. Very small leaks can be detected in this way.

Measurement will be made with a bank of turbine meters (probably 3-20" or 4-16") in parallel with each meter proved separately. Each will be equipped with a variable ratio computing counter so that meter factor and compressibility can be taken directly into account. These readings from each meter will go to an electronic totalizer or combinator then through a temperature compensator so that net barrels of oil are registered digitally at each end of each line.

A digital comparator or deviation counter taking plus readings from the platform register and minus readings from the onshore register may then be used as a leak detector. These are normally equipped with two thumbwheel adjustors, one for the time interval, the other for the number of barrels deviation before alarm. For example, the time interval might be set at 10 minutes and the deviation at 8 barrels. If at the end of the present 10 minute time period the deviation was only 6 barrels, both would reset and start another 10 minute time period with zero barrels differential. Equipment of this type is already in use in several critical areas--most notably New York City.

Several other methods of leak detection are being developed. One involves only large full stream mechanical displacement provers at each end of each line. Spheres are released simultaneously in each, then with known volumes between switches in each and measuring the travel time in micro seconds, differences in flow rate could be determined. A conventional meter bank and smaller prover would still be needed but only on the onshore end of the line.

The pipeline from the terminal to St. James will be monitored in much the same way as the lines from the platform to shore using net metered barrels in and out. Since this is a longer line and will probably eventually have booster stations, the calculation of compressibility etc. will be more involved; however, by calculation and experience it can be programmed into a computer which will act as a continuous watchdog.

Aerial patrol on a regular basis of all portions of the system is, of course, assumed.

Preparation must be made to take care of spills. Spill handling is a rapidly expanding science and since equipment for this use is not overly sophisticated and would be available on a few months order, it seems advisable to defer any decisions or recommendations at this time. It appears likely that we would need some equipment of our own both on the platform and ashore. Larger spills might well be handled by contract and included as an operating expense.

Surge Protection

Pressure due to surge occurs whenever the rate of flow is changed in an operating pipeline. Department of Transportation regulations allow pressure surge to go 10% beyond maximum operating allowable pressure of 72% specified minimum yield strength.

When a booster station is installed between the terminal and St. James, it will be necessary to put in a control system which will automatically close down on a control valve at the originating station to reduce line pressure in case of emergency or scheduled shutdown.

Microwave System

Investigations of microwave, buried cable and leased line telemetering systems revealed a microwave system to be the most feasible for this project. A microwave system carries advantages of economy, versatility, and availability of existing systems. A buried cable system is economically unattractive for the conceptual control system considered, whereas the leased lines in the remote South Louisiana areas, both onshore and offshore, may be unreliable.

The Microwave system will consist of a minimum of four stations with one each located at the offshore platform, the terminal, midpoint to St. James (location of booster station) and at St. James Capline as shown on Appendix 17-2. Towers will be required at all locations except St. James where the existing tower can be utilized. Microwave frequency assignments for the immediate area where the port facility is located are numerous. However, it is anticipated that new frequency assignments will be made to the Louisiana Offshore Oil Port by the FCC even though the area is somewhat congested at present. If new assignments cannot be obtained, arrangements will be required to expand and utilize existing microwave systems.

Telemetering design will allow for individual control channels to all remote stations in order that each control channel may be continuously and simultaneously scanned independent of other installed channels allowing for computer control.

In addition to telemetering control data, the microwave system will support voice communications and transmissions of cathode ray tube video displays generated by the terminal computer.

Control Room

A centralized control room designed for integrated installation of all remote controls, records, indications, alarms and displays for marine, terminal and pipeline operations will be housed in the multipurpose Terminal building. All human factors of sight, sound, feeling and physical ability will be incorporated into the design and layout of the control room to maximize effective operator control under all operational work loads and emergency contingencies.

Sufficient information will be properly displayed to allow for effective assimulation of data, minimizing time required for decisions. Proper controls and communications will be suitably integrated for operator reaction with minimal physical or time consuming efforts. A conceptual layout of the control room is shown in Appendix 18-1.

Communications

In order that the audio communication system meets the conceptual design of the control system, the following criteria has been used in developing the communication system:

1. Separate long range and short range communication links
2. Separate operations and maintenance communication links
3. Separate marine and land communication links
4. Provide sufficient but not 100% overlapping communication links.

The land communications will consist of a UHF mobile relay system providing mobile to mobile and mobile to central control communication from any area along the pipeline. Also, the tank farm terminal will be supported by a UHF mobile relay system providing for portable to portable, portable to mobile, portable to central control, mobile to mobile and mobile to central control communication links.

The central control room will be equipped with wire line communications to shipping agents utilizing microwave channels with interconnections to common carriers. A high frequency marine radio will be included for communications from central control to tankers after entry into the Gulf of Mexico waters.

The marine communications will consist of two UHF mobile relay systems located on the offshore platform with controls from central control over appropriate microwave channels. One marine mobile relay will provide for launch to launch, launch to platform, and launch to central control communication links. The second mobile relay will provide for portable (mooring master) to portable, portable to central control, and portable to platform communications. Necessary limited ties will be made between the launch mobile relay for launch to mooring master communications.

Marine operations will be supported by a very high frequency multichannel radio for short range ship to central control and ship to platform communications. This radio will be utilized for initial contact for mooring master rendezvous, berth assignments, anchorage assignments, and custom communications.

The conceptual design of the communications system is shown in Appendix 17-2.

Computer

Primary system operation will be implemented by a computer system. Secondary operation will be provided by redundant analog records, indications and alarms of very essential variables required for limited remote control operations and verbal directives to local control areas for safe continuous operation of all facilities.

Computer hardware and software will be designed for complete integration into the supervisory system. Operator interface will be provided by the latest developments of input-output devices. These shall include CRT video displays and keyboard controls, teleprinters, and computer driven analog records and indications.

Program loading will be accomplished by high speed magnetic tape cassettes. Foreground and background capability will be provided to prevent computer downtime during program compiling, assembly and debugging.

Software will be ideally designed for "English" input and output for ease in training and reliable operations by personnel. Hardware will be selected for reliability, utilizing fixed head bulk memory units, solid state printers, and "non-mechanical" computer peripheral.

Weather Information

In order to maintain safe operating conditions and to prevent unnecessary shutdown of the port facilities, a weather information center will be required in the central control room. The weather information center will include telecommunications with U. S. and Independent weather stations, terminal meteorological information collected by automatic weather instruments, platform meteorological and oceanographical information collected offshore and a weather radar with a minimum range of 250 miles located at the terminal site.

The weather data collected will be utilized in determining and scheduling daily operations. Hourly operations can be initiated as deemed appropriate from analysis of all weather data and the weather radar.

SUPPORT

Terminal Building

The main building at the terminal is a multipurpose structure which houses administrative offices, the central control room and support equipment, warehouse, workshops, laboratory and personnel cafeteria (Appendix 18-2).

The building is reinforced concrete type construction, built on prestressed concrete piling with sufficient elevation to minimize exposure to hurricane tidal waves and flood tides. Sufficient access is provided by personnel elevator, automotive ramp, hydraulic freight elevator, commodity lift and fire proof stairways.

The building is supplied with emergency power and fire prevention equipment for the protection of personnel and continuous operation of the central control room.

Additional buildings are required for the main substation switch gear, the small boat harbor rigging loft and miscellaneous structures for domestic utilities, water treating and local terminal instrumentation.

Small Boat Harbor

In the support of a proposed large marine operation, it will be necessary to construct a small boat harbor at the terminal complex site. This harbor should be sized to handle the docking of all launches, crew boats and work boats. Heavy hoist equipment should be available to load all heavy material that will be necessary in marine operations. It will be necessary to provide facilities to fuel all the small boats that use this dock. It will be necessary to provide sufficient space for the storing and handling of large hoses, buoys, chains and swivels. The west side of the terminal complex is suggested to be the desired site for the harbor because of existing canals with sufficient water depth.

Treating Facilities

It is assumed these facilities will be necessary to operate the Terminal complex and comply with environmental control standards. A brief description of these facilities are as follows:

1. Tankage water draw lines will be connected to a closed sewer line system.
2. Collection pond for receipt of sewer line discharge.
3. Contents of the pond will be run through API Separator and to the air flotation unit.
4. Sand filter installation for further treating from the flotation unit.

5. Two injection wells will be provided to dispose of treated water.
6. Natural drainage will be provided for "run off" water and will be contained in a large pond before final release to the natural streams.

Energy Supply

It is anticipated that reliable electric service can be provided to the terminal facilities by the Louisiana Power and Light Company. Peak electric demand for the terminal will not exceed 52,000 KVA for the 1.67 million barrels per day case nor 125,000 KVA for the 3.75 million barrels per day case.

It is expected that Louisiana Power and Light can construct the necessary transmission lines to the terminal site for reliable continuous service at an economical rate.

Consideration should be given to owned electric generation facilities, natural gas fired boilers and crude oil fired boilers as alternate sources of energy for the terminal facilities.

ST. JAMES PIPELINE

The pipeline from the terminal to St. James will be approximately 78 miles long. Its relative location is shown on the project map, Appendix 1-1. A schematic view of the pipeline, pump stations and receipt and delivery points, is shown on Appendix 19-1.

Initially the only pump station will be the originating station at the terminal. As throughput builds up, a midpoint booster station, when needed, will be built at a point just north of the crossing of the Intracoastal Waterway. Both stations will be electric motor drive. Measurement into and out of this line will be by turbine meter, the same as the offshore lines.

The pipeline route from the terminal to St. James, as well as the terminal site itself, was first tentatively selected from U. S. Geological Survey Maps. Next, a reconnaissance was made on the ground and by helicopter for further evaluation. Finally, aerial photographs were obtained from the Corp of Engineers for use in determining the final route.

Pipeline design is in accordance with DOT "Minimum Federal Safety Standards for Liquid Pipelines" and ANSI B31.4. Three optimum line sizes were selected; 42", 48" and 54" for the three maximum throughput cases. Grade X-60 pipe with 0.500" wall thickness has been used in all cases. Maximum operating pressure at 72% of specified minimum yield is the controlling factor in design. Appendix 19-2 shows flow rate versus pressure drop for the three line sizes at viscosities from 50 to 150 ssu.

Pipe prices are based on domestic steel prices for API 5LX grade 60 pipe. No domestic pipe mill is now set up to make electric weld or submerged arc weld pipe larger than 44". Pipe mills have stated that two years lead time for 48" pipe would be required from date of definite commitment and that although there have been a number of inquiries, no 48" definite commitment has yet been received. Spiral weld pipe in 48" or larger grade X-42, half inch wall is now available and could be had in higher grades and wall thickness in much less than two years.

Most of the 78 mile route is through marsh and swampland, breaking down as follows:

Mile Post:		
	0- 4	open marsh
	4-19	parallel to Tennessee Gas Pipeline Canal
	19-53	open marsh
	53-73	timbered swamp
	73-78	cultivation (mostly sugar cane)

Four highways, two railroads, the Intracoastal Waterway (about midpoint on the pipeline) as well as a number of canals and bayous are crossed en route. There are no oyster leases to be crossed. A map of the lower half of the route has been filed with the Louisiana Wildlife & Fisheries Department which gives us priority over any future oyster lease filings.

Recommended specifications and construction cost estimates were obtained from three large pipeline contractors who are all familiar with the area. An average of the three estimates was used in the investment.

Concrete coating estimates are based on a specific gravity in sea water when empty of 1.15. Although this is a good practical factor to use offshore, it is probably heavier than necessary for the pipeline to St. James and should be given a careful analysis at the time of final design. Internal coating is not considered necessary in the St. James line.

Construction costs are based on the "flotation canal" type construction which may be slightly more expensive than the "push ditch" type but has several advantages. The flotation canal leaves the canal as a permanent part of the landscape. This distubs more area and makes construction of extra bulkheads necessary to prevent any changes in surface water flow. However, in case of small leak, it is more quickly detected and the oil is more easily confined and more easily picked up off the canal between bulkheads.

Foreign line crossings both present and future are easier and cheaper with the flotation canal type construction. In larger line sizes where heavier construction equipment is necessary, the cost advantage of the push ditch type may entirely disappear. In actual construction we may well need some of both types construction and this will be better determined at the time of specification writing. Where we parallel Tennessee Gas canal for 15 miles we would expect to be able to work out an agreement for merely widening their existing canal.

The St. James line can be laid at any time of year; however, there could be a considerable cost advantage in scheduling it for the winter months during the slack season for pipeline construction offshore and further north. The job should probably be broken into 4 or 5 short spreads in order to interest more bidders. The northernmost spread should include only the 10 miles or so in St. James Parish where only union contractors may work. The other spreads in LaFourche Parish may go either way.

Pipeline construction costs may be roughly summarized as follows: (1972$)

	42" Total $M	48" Total $M	54" Total $M
Pipeline Material & Construction	39,630	46,330	55,930
Pump Stations, Metering, Etc.	4,560	6,390	8,770
Sub Total	44,190	52,720	64,700
ADD:			
5% Supervision & Engineering	2,210	2,780	3,400
TOTAL	46,400	55,500	68,100

Mr. Read. Brief biographies of key personnel responsible for the various engineering aspects of our project are attached to this statement as pages 1a and 2a.

The purpose of our project is to provide an economically and environmentally feasible facility to handle the transportation requirements of the large volumes of imported petroleum needed to meet the Nation's growing energy demands.

By 1985 our Nation's energy demands are expected to reach the equivalent of 60 million barrels of petroleum per day. Domestic sources of energy—including petroleum, natural gas, nuclear power, coal, and hydroelectric power—are predicted to meet only three-quarters of the national requirement.

Presently crude oil supplies 42 percent of national energy consumption. Domestic crude production is expected to peak in this decade at about 13 million barrels per day. This represents only 77 percent of our present needs, and by 1985, in light of both rapidly rising demand and domestic inability to meet that demand, we will need to import 52 percent of our crude oil requirements—an amount in excess of 15 million barrels of petroleum per day.

The cost of transporting this large volume of imported crude oil takes on great significance. Costs can be considerably lessened through the use of supertankers, with a draft of over 60 feet. Then years ago there were virtually no ships in the world of 100,000 dwt. Today there are over 200, and this number is expected to reach 800 by 1975. By 1980 the 200,000–300,000 dwt tanker will become the world's standard. Pertinent excerpts from an analysis of the world tank ship fleet prepared by Sun Oil Co. are attached to this statement.

At present bringing oil to East and Gulf Coast ports from the Persian Gulf in tankers of 47,000 dwt costs approximately $13 a ton. By contrast, 250,000 dwt tankers can transport crude oil to Louisiana for about $5.70 a ton. The cost drops to $5.15 a ton in 500,000 dwt tankers.

Looked upon conversely, these transportation savings can be viewed as penalties to American industry and consumers for failing to utilize these larger vessels—higher transportation costs for crude oil will result in increased consumer product prices, a further loss of competitiveness in world markets for American products, and a high risk of the movement of critical processing industries outside the United States.

A second significant reason for the use of supertankers to satisfy our expanding oil import needs is the projected impact of these ships in reducing port congestion. The Port of New Orleans, for example, handles some 120 million tons of cargo annually, one-half of which involves the use of barge transportation. The 1,500 foot wide maintained channel at the foot of Canal Street is annually navigated, inbound only by over 44,000 barges, 17,000 towboats, and tugs, and almost 15,000 ocean-going vessels. This average of 76,000 "bottoms" annually does not include pleasure craft or ferry boats nor outbound traffic, and amounts to 210 "bottoms" daily through the Port of New Orleans. Actually, this figure could be doubled for two-way traffic. For statistical purposes, the Port of New Orleans is defined as everything on the Mississippi River below the Port of Baton Rouge.

Because of depth constrainsts, ports on the east and Gulf coasts cannot handle supertankers—ships requiring a draft over 60 feet of water. Although there are transshipment alternatives—bringing supertankers to deep draft ports near the United States and transshipping via smaller ships, or loading smaller ships directly from supertankers—transshipment alternatives do not solve, and in fact would aggravate port congestion problems.

The use of marine terminals specifically designed to handle supertankers would reduce the potential number of ships arriving at existing ports. For example, in the case of the use of 47,000 dwt tankers as opposed to 250,000 dwt tankers, arrivals would be reduced from more than 45 daily to less than nine daily by 1985.

Industry figures show that more than 78 percent of tanker accidents occur in congested harbor areas. Reducing the number of ships in already congested traditional port areas reduces the potential for accidents.

In view of the significant economic and environmental advantages of supertanker operation, the construction of deepwater crude oil terminals in proximity to the U.S. refining centers is a pressing need.

Two deepwater terminal projects are being designed to serve the Gulf Coast—the Loop and Seadock proposals. Refineries located along the Texas Gulf Coast, and in western Louisiana would be served by Seadock. The Loop facility will serve refineries in Louisiana, Mississippi, Arkanasas, Tennessee, Missouri, Kentucky, Illinois, Indiana, Ohio, and Michigan.

It is our opinion that these facilities are not in competition with each other. Both of these projects are required to meet the import projections mentioned previously.

The Louisiana offshore oil port project as proposed by Loop would consist of a marine terminal for unloading deep draft crude oil tankers, large diameter buried pipelines from the marine terminal to an onshore stroage facility, and the onshore storage facility itself.

I refer subcommittee members to the map included in the addenda as page 52.

The marine terminal would be located in 100 to 200 feet of water approximately 21 miles off the Louisiana coast. The storage facility would be located in LaFourche Parish.

An adjunct to the Loop facility will be a pipeline from the onshore storage facility to the St. James, Louisiana terminal of Capline.

The LOOP facility will supplement crude supplies to existing Louisiana and Mississippi refineries, and through Capline, the largest crude oil pipeline in the United States, will supply many of the refineries of crude oil deficient mid-continent America as far north as Detroit. These areas contain more than 25 percent of the Nation's total refinery capacity.

A map of the LOOP service area is attached as page 6a of the addenda.

In order to illustrate the projected magnitude of imported crudge oil supplies moving to the Midwest through the proposed LOOP project, I refer the members of the committee to two tables included in the addenda on page 7a.

These projections were prepared as part of a study of the economic impact of a Louisiana Offshore Oil Port by Gulf South Research Instituted (located in Baton Rouge, La.) and the H. J. Kaiser Co. of California, and are based on estimates of U.S. energy requirements for selected future years as compiled by the U.S. Department of the Interior and the National Petroleum Council.

As indicated by the table entitled "projected crude Throughput Volume for a Louisiana Offshore Oil Port," approximately 991,000 barrels of imported crude oil per day would move through a facility to mid-continent refineries in 1977, growing to 1,895,000 barrels per day by 1985, and 2,375,000 barrels per day by 1990. Each of these throughput projections are approximately 50 percent of the total throughput of the terminal as projected in the study.

The economic impact study presents, in some detail, projections of an offshore oil port's impact on refinery capacity and employment, and expresses a benefit-cost ratio to industry and the State of Louisiana.

In this regard, I submit a copy of the Economic Impact Study for the record of this hearing.

A number of different concepts for the marine unloading terminal were studied as LOOP facility alternatives. These included the "man-made island" facility of the type proposed by the Maritime Administration, the more conventional "fixed pier" facility and the "single mooring" concept.

Of these alternatives, the "man-made island" type was rejected as infeasible for both economic and operational reasons. The "fixed pier" type was also rejected for economic and operational reasons. This type of facility in a configuration designed for use in our project would cost in the vicinity of $225 million; however, docking supertankers to a fixed pier in the open sea with the weather regime prevalent in the Gulf of Mexico was considered infeasible without the addition of a prohibitively expensive breakwater system.

In the opinion of LOOP engineers, and engineering contractors, a fixed pier facility without a breakwater system would be inoperable more than 50 percent of the time due to unfavorable weather conditions. The $225 million quoted for such a facility does not include the cost of a breakwater system.

The LOOP engineers chose the single point mooring, or SPM, as the most economical and safest method of operation for unloading large volumes of crude oil.

With regard to cost, an SPM configuration for the proposed LOOP project would call for an investment in the vicinity of $150 million. This includes five SPM's, two pumping platforms, a crew quarters platform and four pipelines (48 inches by 56 inches in diameter) 21 miles long, connecting the marine terminal to the onshore storage facility.

In addition, the SPM concept would allow a Louisiana offshore oil port to be in operation in the Gulf of Mexico weather conditions more than 90 percent of the time, based on studies of the significant wave periods and wave height categories.

The SPM concept has been proven in over 100 worldwide applications since the first single point mooring buoy was installed in 1959.

A list of all single point mooring installations worldwide is attached in the addenda to this statement.

SPM systems operated by one LOOP shareholder in Libya, Singapore and Okinawa have handled 1.2 million barrels of crude oil without a major spill. Another shareholder operates installations handling 450 million barrels annually, and these systems have handled a total of 3.6 billion barrels without a major spill.

A "major spill" is defined in the National Oil and Hazardous Materials Pollution Contingency Plan, as required by the Federal Water Pollution Control Act, as a volume of more than 10,000 gallons (approximately 240 barrels) in internal waters, and more than 100,000 gallons (approximately 2,400 barrels) in offshore waters.

In order to develop a clear understanding of the system proposed, I refer the members of the committee to the simplified flow chart attached.

As indicated, the essential elements of the SPM concept include one or more single point moorings, pumping and operations platforms, and submerged pipelines carrying unloaded crude oil to a shore storage terminal.

A diagram of a typical single anchor leg mooring is also attached.

Anchored to the floor of the Gulf by pilings, the SPM floating buoy can withstand very extreme sea and weather conditions. Vessel approach and departure from SPM's are relatively simple maneuvers for tankers of all sizes. Vessels approach the SPM directly, and mooring can be accomplished in a very few minutes with the aid of a mooring launch. The vessel is secured to the SPM with bow lines only, and is free to rotate around a 360 degree arc, like a weathervane, always heading into the wind, sea, and current. The vessel and SPM are not subject to as large environmental forces as a vessel rigidly secured to a fixed berth.

When the tanker finishes unloading, hoses which had been connected to the tanker's manifold are capped and placed in the water. Mooring lines are slipped, and the tanker leaves the berth without the aid of tugs or launches.

The design of the remaining elements of the LOOP project—the operations platforms, pipelines and tank far are conventional in nature, and certainly not unique to systems presently in use offshore Louisiana. Designs of these items are being developed in accordance with existing Federal and State regulations, and industry standards.

I submit for the record of this hearing a draft of the listing of codes, regulations, standards and practices incorporated in the LOOP Basic Design Manual.

A vast storehouse of successful experience with offshore platforms, submerged pipelines, and tank farm construction in Louisiana is readily available.

Engineering design criteria being developed by LOOP engineers have, as a key consideration, protection of the environment. Main factors to be considered in designing for minimum environmental impact for a deepwater crude oil unloading terminal include:

(1) Location of the facilities;

(2) Designing safety factors in response to potential internal or external forces such as pumping pressures and weather conditions:

(3) Protection against abnormal conditions such as hurricanes or human error;

(4) Containment and treatment of normal effluents such as waste water and sewage;

(5) Design of monitoring systems and emergency reaction plans;

(6) Design of methods to isolate and control spills.

Other factors requiring consideration, while not part of facility engineering design, include establishing operational procedures to prevent or detect spills, and portable equipment to control and cleanup spills.

Location of the offshore platform and SPM complex 21 miles offshore is outside of potentially dangerous bottom mudslide areas, such as those around the mouth of the Mississippi River, and clear of existing ship traffic.

Proposed navigation fairways and maneuvering areas are clear of existing production platforms. LOOP proposed that all fairways will be marked by lighted buoys, and that LOOP will undertake radar surveillance and monitoring of all tanker approaches in the fairway and to the marine terminals.

As I have previously mentioned, the proposed LOOP facility is conventional in nature, including the use of pipelines to transport crude oil to the shore.

The safety record of pipeline transportation far exceeds that of other modes of transportation. In great measure this excellent record is due to the development and adoption of codes and standards by industry and professional organizations. Nineteen such codes and standards have been adopted by reference in the Department of Transportation regulations governing transportation of petroleum and petroleum products by pipeline, appearing in section 195.3 of Title 49 of the Code of Federal Regulations. These codes and standards pertaining to pipelines and those which concern other aspects of the LOOP project are shown at pages 11a and 12a of the addenda.

Pipelines from the marine terminal to the onshore storage facility will be corrosion protected, wrapped and anchored in concrete, and buried beneath the seabed, using the technology developed over many years of offshore pipelining.

As an example of this technology, there are more than 1,685 miles of inservice oil pipelines of 8 inches or more in diameter in the submerged lands and other Continental Shelf off Louisiana.

Pipe, valves, fittings and pumps must meet stringent manufacturer's testing specified by applicable standards. In addition, LOOP will employ third party inspection at pipe mills, and will test pipe after shipment to Louisiana.

During construction, LOOP will inspect welding, corrosion coating and structural materials with radiographic and electrical test methods. All phases of the construction will be inspected by experienced personnel, and on completion of the facility installation, all parts of the system subject to pressure will be hydrostatically tested well above maximum operating pressure.

LOOP also proposes to install leak detection and reaction systems. Pipelines coming to shore will be equipped with custody transfer grade metering on the offshore platform and at the onshore terminal. These meters will be continuously monitored by a computer located in the control building at the onshore terminal.

Should the onshore meter show a predetermined quantity less than the offshore meter, the system will alarm. Also, a simultaneous decrease in discharge pressure and an increase in flow rate at the platforms will cause the pumping unit on that pipeline system to shut down, and an alarm to be transmitted to the control center.

LOOP operating personnel will be assisted by sophisticated visual displays of the facilities and operating conditions. Weather and sea data will be continuously monitored and visually shown. A first class communications network will be installed, with standby power for emergency operation provided.

Facilities will be designed to contain effluents until treatment renders them harmless to the environment. Storage tanks will be equipped with floating roofs to minimize venting of hydrocarbons to the atmosphere. A system of dikes, sumps, and directed drainage will collect oily waste water which will then be treated prior to returning to the outside environment. The entire tank farm area will be enclosed in a dike higher than the incidence of any storm driven tide over a 100-year period.

Storage tanks will be surrounded by dikes to contain potential spills in the tank farm area, and the pipelines in the area will be equipped with valve systems to isolate damaged pipes. Pumps will be available to clear damaged pipelines or storage tanks, and the entire facility will be equipped with both fixed and portable firefighting systems.

The use of supertankers and deepwater terminals would, by reducing the number of tankers arriving at existing U.S. ports, and thereby reducing the probability of collisions or groundings, reduce the number of oil spill accidents.

The results of a CEQ study concluded that the use of supertankers and deepwater terminals would reduce spills to 10 percent of what they would be with the use of smaller ships.

Further, the LOOP facility, as an unloading terminal, would not be subject to the problems of disposal of oily ballast.

Although the potential for a major spill is greatly reduced, contingency plans must be drawn in the event of a spill. Spilled oil must be contained and retrieved. The American Petroleum Institute, the Environmental Protection Agency and the Coast Guard are involved in extensive research programs into the mechanics of spill cleanup in open water. Trained personnel and fast reaction cleanup equipment are presently available in the Gulf of Mexico.

Industry and tanker operators assure financial liability for cleanup of spills. The "TOVALOP" program covers over 95 percent of tankers serving the United States, and provides for cleanup costs based on tanker tonnage up to $10 million.

In addition, oil companies participating in "CRISTAL" provide coverage up to $30 million for the cleanup procedures immediately, without delays wating for responsibility to be assigned.

This immediate response mechanism certainly is in aid of the requirements of the Federal Water Pollution Control Act Amendments of 1972 for reimbursement from a vessel owner or operator, and for reimbursement from an offshore facility owner or operator to the United States for cleanup costs. This act provides as to vessel owners and operators a liability of $1,000 per gross ton, or $14 million, whichever is lesser, if the spill results from acts or negligence short of willful negligence or misconduct.

In the latter case the act provides expressly that there is no limit on the liability of the owner or operator. As to owners and operators of offshore facilities, the liability is $8 million when short of willful negligence or misconduct, with no limit when the spill results from willful negligence or misconduct.

Initially, it is expected that the LOOP facility will consist of three SPM's, operations platforms, and two buried pipelines to a shore storage facility. The SPM's would be located in 100–120 feet of water, approximately 21 miles offshore, and SPM's and lines to shore would be added subsequently until the full configuration of five SPM's and five lines to shore is attained. This facility will have a potential throughput capacity of over 4 million barrels per day, and would be able to unload tankers of 500,000 dwt at a rate in excess of 100,000 barrels per hour.

Investment figures for the LOOP project include approximately $150 million for the offshore facility, including pipelines, and $130 million for the onshore storage terminal. A large diameter pipeline connecting the storage facility with the Capline terminal at the Mississippi River will require an additional investment of $88 million.

With regard to this pipeline, I should point out that it is being designed by LOOP, but will be separately owned by a number of LOOP shareholders.

In site selection for the various facility elements, LOOP, Inc., has maintained close contact, and continues to consult with local, State, and Federal agencies.

In studying the various alternatives for the marine terminal location, including navigation fairways, we have been in contact with State and Federal agencies having interest in our proposed project.

We have maintained contact with representatives of both the Environmental Protection Agency and the Council on Environmental qualify, and have consulted with them concerning design criteria, facility location, and operating procedures.

To determine the preferred routes for onshore pipelines, consultations are continuing with representatives of the Louisiana Department of Wildlife and Fisheries, Louisiana State University Center for Wetland Resources, and members of the Lafourche Parish Port Commission.

On March 30, 1973, in a presentation to the Louisiana Deep Draft Harbor and Terminal Authority, a State agency created by the legislature to promote and regulate deep draft port development in Louisiana, LOOP requested that our proposed terminal facility be included as phase 1 of the authority's development program.

The Louisiana statute requires that the authority promulgate an environmental protection plan to assure protection of the environment throughout all phases of the authority's development program.

I submit a copy of the act creating the Louisiana Deep Draft Harbor and Terminal Authority and outlining the environmental protection plan for the record of this hearing.

In preparation for our designation as phase 1 of the Louisiana Deep Draft Harbor and Terminal Authority's development program, and in expectation of an application for an offshore oil port to be readied for Federal approval late this summer, LOOP has recently initiated two major studies leading to a detailed environmental assessment.

LOOP has begun a 12-month environmental assessment program, expected to cost up to $1 million, designed to more than meet the requirements for environmental impact statements outlined by the National Environmental Policy Act of 1969.

LOOP will prepare a complete environmental assessment report and submit this report, as well as all basic data used to prepare the report to the designated Federal lead agency as part of the permit application.

The objectives of LOOP's program are to provide a comprehensive description of existing baseline conditions, and to predict the impact of construction and operation of the proposed facility on these conditions.

The study will be the most comprehensive ever undertaken in Louisiana's coastal zone, and the data will ultimately revert to the public domain for use by all citizens with an interest in this area.

For this study, the proposed facility has been divided into two basic components: The area of the offshore unloading terminal, including the area of the pipeline route to shore, and the area of the tank farm.

A study of the pipeline route from the tank farm to Capline is being undertaken under the same contractual agreement. Study of the tank farm area will also include study of the adjacent bays and estuaries.

Three organizations have been chosen to conduct these environmental assessment studies. Nicholls State University located at Thibodeaux, La., will furnish seven principal investigators with expertise in chemistry or biology, and will be responsible for all offshore chemical and biological investigations.

The area to be studied by Nicholls consists of the waters located approximately 5 miles on either side of the proposed offshore terminal and pipeline route from the unloading area to shore.

Bottom trawling will be employed monthly at each of 15 stations to determine the species composition, relative abundance and seasonal distribution of the fishes and large benthic invertebrates, primarily crustacean.

In addition, the water column and bottom sediment will be sampled for benthics, zooplankton, phytoplankton, and chemical analysis.

The Louisiana State University Center for Wetland Resources has been chosen to conduct the offshore physical oceanographic studies and the complete onshore environmental assessments of the tank farm site, the adjacent bays and estuaries, and the pipeline route to Capline.

The experience and expertise of the LSU Center for Wetland Resources in marshland studies is widely recognized. LSU will furnish nine principal investigators, as well as six research associates.

As part of the oceanographic study, a 12-month general survey will be made of the seasonal variability of the circulation patterns in the areas of the gulf of Mexico affected by the proposed facility.

In addition, a detailed study will be made utilizing moored current meters to determine the velocity structure in the vicinity of the proposed offshore terminal site.

Monthly samplings will be made of temperature and salinity distributions in the regions from the Mississippi Delta to the area of the proposed offshore site, and from the shore to the 120-foot-depth contour.

Net drift from the vicinity of the proposed site, and from the shore will be evaluated by drift card releases, drogue tracking, and dye releases.

In addition to the offshore physical study, LSU will have responsibility for the onshore tank farm and pipeline route.

During the 12-month study, LSU will identify all present, past, and future land uses and provide a detailed description of the topographic, physiographic, and geologic features within the area of the proposed action.

On a bimonthly basis the study will identify and qualify all terrestrial and acquatic organisms in the various habitats involved, including the near-shore gulf bottom, estuarine water bodies, natural levee forests, and back swamp forests.

The socioeconomic considerations for the environmental assessment report will be furnished by an economic impact study already completed.

Existing air and water quality at the proposed site and maximum noise levels at site boundaries will be determined. At the close of the 12-month program, LSU will prepare the final report and interpret all data and results, including those data obtained by Nicholls State University.

In addition to Nicholls State University and LSU, LOOP has retained the firm of Dames and Moore to serve as consultants. The primary purpose of Dames and Moore is to provide guidance as required for environmental report planning and preparation. Total cost of LOOP's environmental assessment program will be as much as $1 million.

A common objective of State and Federal Governments and the oil industry must be to assure that the United States has the ability to receive sufficient supplies of foreign petroleum to meet energy requirements.

It is our position that Federal legislation for offshore ports should take the form of a single-purpose licensing law.

H.R. 5898 appears to adopt this concept, as contrasted with H.R. 5091. Under H.R. 5091 the apparent purpose is to provide for the fullest protection of the marine environment against adverse impact which may result from construction and operation of several kinds of offshore facilities.

Under the National Environmental Policy Act any Federal agency with special expertise concerning the environmental impact of action proposed by another agency has a duty to comment upon such impact.

Logically, if there is a justification for the certification responsibility envisioned in H.R. 5091, a similar justification could be reasoned for each other agency which has special expertise on other aspects of the environmental impact of such a project.

But if all such agencies possessed certification responsibility, the application of the certificate procedure would reach the same result as that intended under the National Environmental Policy Act.

As indicated previously, the focal point in environmental assessment of a project under the National Environmental Policy Act is the agency possessing the responsibility for authorization of the project. Such an agency has not been designated for an offshore oil port. This is the pressing need, and it can be met by application of the concept adopted in H.R. 5898.

We concur with the statement of the chairman at the commencement of these hearings that neither of these bills meets the overall need.

We would be pleased to submit to the committee our analysis of necessary matters to be covered in legislation so far as it relates to offshore oil ports. Such an analysis would consider H.R. 5898, as well as the other bill, which adopts the licensing law concept—H.R. 7501, as proposed by the Department of the Interior.

Pending submission of the analysis, we observe generally that existing statutes ought not to be amended in a patchwork fashion, that the licensing procedures should be as simple as is possible, and result in an expeditious administrative decision following concomitant consideration of energy needs and environmental impact; that a suitable means for consideration of the interests of the respective state be found; and that there be specific extension of such laws as are necessary to the offshore oil port.

In conclusion, there is a real and pressing need for governmental action which will establish procedures under which suitably located deepwater terminal facilities can be constructed without unnecessary delay.

The urgency of this need is highlighted by rapid growth in U.S. petroleum imports and the time lag between a commitment to construct a deepwater terminal and its actual operation.

I would like to again thank the distinguished members of this committee for their interest and will answer any questions you may have concerning our project.

The marine terminal would be located in 100 to 120 feet of water, approximately 21 miles off the Louisiana coast.

The storage facility would be located in Bayou LaFourche. The LOOP facility will supplement crude oil supplies to existing Louisiana and Mississippi refineries, and through a tie-in to Capline, will supply many of the crude oil deficient Midwest areas as far north as Detroit.

These areas contain 25 percent of the Nations refining capacity. The map is on page 6a of the addenda.

The projected magnitude of crude oil supplies moving to the Midwest, through a Louisiana offshore oil port were considered in a study prepared by Gulf South Research Institute and the H. J. Kaiser Co. These supply figures are based on estimates of the U.S. energy requirement for selected future years, as complied by the U.S. Department of Interior and the National Petroleum Council.

As indicated, approximately 991,000 barrels of imported crude per day would move through a facility to Midwest refineries in 1977.

This would grow to 1,895,000 barrels per day by 1985, and 2,375,000 barrels per day by 1990.

The impact study presents in detail projections of a Louisiana offshore oil port effect on refinery capacity, and also employment.

I will submit a copy of this study also for the committee's record.

The Chairman. Without objection it will appear in the record at this point.

[The document referred to may be found on p. 553.]

Mr. Read. A number of different concepts for the marine unloading terminal were studied as LOOP facility alternatives. These included the manmade sea island facility, the types studied by the Maritime Administration, the more conventional fixed-pier facility, and the single-point mooring concept.

Of these alternatives, the manmade sea island type was rejected as infeasible for economic reasons.

A fixed-pier facility without a breakwater system would be inoperable 50 percent of the time, due to the unfavorable weather conditions.

LOOP engineers chose the single-point mooring as the most economical, safest and most environmentally satisfactory method of operation for unloading large volumes of crude oil.

The SPM concept would allow a Louisiana offshore port to be operational in the Gulf of Mexico weather conditions more than 95 percent of the time. This is based on studies of wave periods and height categories.

The SPM concept has been proven in over 100 worldwide applications since the first mooring buoy was installed in 1959.

We have included a list of all the single mooring installations worldwide on pages 8a through 28a of our statement.

SPM systems operated by one of the LOOP shareholders in Libya, Singapore, and Okinawa have handled 1.2 billion barrels of crude oil without a major spill.

Another shareholder operates installations handling 450 million barrels annually, and these facilities have handled 3.6 billion barrels without a major spill.

For a simplified view of the SPM LOOP look on page 21a and 22a of our addenda.

The Chairman. Let us have just a moment to look at that.

We will come back to that.

You may proceed.

Mr. Read. All right, anchored to the floor of the gulf the SPM floating buoy can withstand very extreme sea and weather conditions and vessel approach and departure from SPM's are relatively simply maneuvers for tankers of all sizes.

The remaining elements of the LOOP project, the operations platforms, the pipelines and the tank farm are conventional in nature.

Designs of these items are in accordance with existing Federal and State Regulations, and industry standards.

I will also submit for the record a draft listing of the codes, regulations, standards and practices which are incorporated in the LOOP Basic Design Manual.

The CHAIRMAN. Without objection.

[The document referred to follows:]

LOOP BASIC DESIGN MANUAL

CODES, REGULATIONS, STANDARDS, AND PRACTICES

3.01 PIPELINES

3.011 Government Regulations

Bureau of Land Management Permits
Corps of Engineers Permits
Office of Pipeline Safety
Title 49, Part 192 Transportation of Natural Gas by Pipeline (Fuel)
Title 49, Part 195 Transportation of Liquids by Pipeline

3.012 Industry Codes, Standards and Practices

3.0121 Codes

American National Standards Institute:
    B31.4 Liquid Petroleum Transportation Piping Systems

3.0122 Standards

American National Standards Institute:
    B16.5 Steel Pipe Flanges
    B16.9 Wrought Steel Butt-welding Fittings
American Petroleum Institute:
    5LS Specification for Spiral-Weld Line Pipe
    5LX Specification for High-Test Weld Line Pipe
    6D Specification for Pipeline Valves
    601 Specification for Metallic Gaskets
    1104 Standard for Welding Pipeline
Manufacturer's Standardization Society:
    SP44 Steel Pipe Line Flanges
    SP48 Steel Butt-welding Fittings (26" up)

3.0123 Recommended Practices

American Petroleum Institute:
    RP5L1 Railroad Transportation of Line Pipe
    RP1102 Liquid Petroleum Pipelines Crossing Railroads and Highways
    RP1109 Marking Liquid Petroleum Pipeline Facilities
    RP1110 Pressure Testing of Liquid Petroleum Pipeline
National Association of Corrosion Engineers:
    RP–01 Control of External Corrosion on Underground or Submerged Metallic Piping System

3.02 OFFSHORE UNLOADING FACILITIES

3.021 Government Regulations

American Bureau of Ships:
    Standards for Hull Design (SPM)
Coast Guard:
    CG–321 Marine Warning System
Federal Aviation Administration:
    Regulation, Part 77 Heliport Navigable Airspace Specification
Outer Continental Shelf Office: OCS No. 8 Platform Safety and Pollution. Part 2 Control Equipment (Installation Only)
OCS No. 9 General Design. Part 1 (Installation Only)

3.022 Industry Codes, Standards & Practices

3.0221 Codes

American National Standards Institute:
- B31.4 Liquid Petroleum Transportation Piping Systems
- C1 National Electrical Code

American Society of Mechanical Engineers:
- F3 Pressure Vessels (Sec. VIII) Division 1

National Fire Protection Association:
- 30 Flammable and Combustible Liquids Code
- 78 Lightning Protecaion Code

Underwriters Laboratories:
- National Board of Fire Underwriters Building Code

3.0222 Standards

American National Standards Institute:
- A58.1 Minimum Design Loads in Buildings
- B16.5 Steel Pipe Flanges
- B16.9 Wrought Steel Butt-welding Fittings
- C37.20 Switchgear assemblies

American Petroleum Institute:
- 2B Specification for Fabricated Structural Steel Pipe
- 2C Specification for Offshore Cranes
- 5L Specification for Line Pipe
- 5LX Specification for High Test Line Pipe
- 6D Specification for Pipeline Valves
- 601 Metallic Gaskets
- 610 Centrifugal Pumps for General Refinery Service
- 613 High-Speed Special-Purpose Gear Units
- 616 Combustion Gas Turbines for General Refinery Services
- 1104 Standard for Welding Pipelines
- 2531 Mechanical Displacement Meter Provers
- 2534 Measurement of Liquid Hydrocarbons by Turbine Meter Systems
- 2543 American Standard Method of Measuring the Temperature of Petroleum and Petroleum Products
- 2545 Method of Gaging Petroleum and Petroleum Products
- 2546 Standard Method of Sampling petroleum and petroleum products

Manufacturer's Standardization Society:
- SP44 Steel Pipe Line Flanges
- SP48 Steel Butt-Welding Fittings (26″ up)

National Electrical Manufacturers Association:
- TR1 Transformers, Regulators and Reactors
- SG3 Low-Voltage Power Circuit Breakers
- SG4 High-Voltage Power Circuit Breakers
- SG5 Power Switchgear Assemblies (For first chapter, see ANSI C37.20—1969)
- WC3 Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
- WC5 Thermoplastic-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
- MG1 NEMA Motor and Generator Standards
- WC7 Cross-Linked Thermosetting Polyethylene Insulation for Power Cables Rated 0 through 600 volts
- WC8 Ethylene-Propylene-Rubber, Ozone-Resistant, Wires and Cables, 5,000 volts and less

Standards of the Hydraulic Institute:
- Single-Point Mooring Forum: Hose Standards

3.0223 Recommended Practices

American Gas Association:
- Gas Measurement Committee Report

American Institute Steel Construction Manual:

American Petroleum Institute:
- RP2A Planning, Designing & Constructing Fixed Offshore Platforms
- RP500A Classification of Areas for Electrical Installations in Refineries
- RP2003 Protection Against Static, Lightning & Stray Currents

Instrument Society of America:
- RP3.1 Flowmeter Installations, Seal and Condensate Chambers
- RP4.1 Uniform Face to Face Dimensions for Flanged Control Valve Bodies
- S5.1 Instrumentation Symbols and Identification
- RP12.1 Electrical Instruments in Hazardous Atmospheres
- S12.4 Instrument Purging for Reduction of Hazardous Area Classifications
- RP31.1 Specification, Installation and Calibration of Turbine Flowmeters
- RP201 Instruments, Gages, Thermocouples, Orifice Plates and Flanges, Control Valves, and Pressure Safety Valves

National Fire Protection Association:
- 10 Installation of Portable Fire Extinguishers
- 20 Centrifugal Fire Pumps
- 37 Stationary Combustion Engines and Gas Turbines
- 77 Static Electricity
- 496 Purged Enclosures for Electrical Equipment in Hazardous Location

Single-Point Mooring Forum:
- Guide: Hose

Steel Structures Painting Council:
- SP1–10 Cleaning Procedures

3.03 STATIONS AND TERMINALS

3.031 Government Regulations

Office of Pipeline Safety:
- Title 49, Part 195 Transportation of Liquids by Pipeline

3.032 Industry Codes, Standards and Practices

3.0321 Codes

American Concrete Institute:
- 318 Building Code Requirements for Reinforced Concrete

American National Standards Institute:
- B31.4 Liquid Petroleum Transportation Systems
- C1 National Electrical Code

American Society of Mechanical Engineers:
- F3 Pressure Vessels (Section VIII) Division 1

National Fire Protection Association:
- 30 Flammable and Combustible Code
- 78 Lightning Protection Code

Underwriters Laboratories:
- National Board of Fire Underwriters Building Code

3.0322 Standards

American National Standards Institute:
- A58.1 Minimum Design Loads in Buildings
- B16.5 Standard Pipe Flanges
- B16.9 Wrought Steel Butt-welding Fittings
- C37.20 Switchgear assemblies

American Petroleum Institute:
- 5L Specification for Line Pipe
- 5LS Specification for Spiral-Weld Line Pipe
- 5LX Specification for High Test Line Pipe
- 6D Specification for Pipeline Valves
- 12D Large Welded Production Tanks
- 601 Metallic Gaskets
- 610 Centrifugal Pumps for General Refinery Service
- 613 High-Speed Special-Purpose Gear Units
- 616 Combustion Gas Turbines for General Refinery Service
- 650 Welded Steel Tanks for oil storage
- 1104 Standard for Welding Pipeline
- 2000 Venting Atmospheric and Low Pressure Storage Tanks
- 2531 Mechanical Displacement Meter Provers
- 2534 Measurement of Liquid Hydrocarbon by Turbine Meter Systems
- 2543 American Standard Method for Measuring the Temperature of Petroleum and Petroleum Products
- 2545 Method of Gaging Petroleum and Petroleum Products
- 2546 Standard Method of Sampling Petroleum and Petroleum Products

American Wood Preserving Association:
  C3 Standard for the Preservative Treatment of Piles by Pressure Processes.
Manufacturer's Standardization Society:
  SP44 Steel Pipe Line Flanges
  SP48 Steel Butt-welding Fittings (26″ up)
National Electrical Manufacturer's Association:
  TR1 Transformers, Regulators and Reactors
  SG3 Low-Voltage Power Circuit Breakers
  SG4 High-Voltage Power Circuit Breakers
  SG5 Power Switchgear Assemblies (For first chapter, see ANSI C37.20—1969)
  WC3 Rubber-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
  WC5 Thermoplastic-insulated Wire and Cable for the Transmission and Distribution of Electrical Energy
  MG1 NEMA Motor and Generator Standards
  WC7 Cross-Linked Thermosetting Polyethylene Insulation for Power Cables Rated 0 through 600 volts
  WC8 Ethylene-Propylene-Rubber, Insulated, Ozone-Resistant, Wires and Cables, 5000 volts and less.
Standards of the Hydraulic Institute:

3.0323 Recommended Practices

American Gas Association
Gas Measurement Committee Report
American Institute Steel Construction Manual
American Petroleum Institute:
  RP500C Classification of Areas for Electrical Installations for Pipelines
  RP2003 Protection against Static, Lighting and Stray Currents
Instrument Society of America:
  RP3.1 Flowmeter Installations, Seal and Condensate Chambers
  FP4.1 Uniform Face to Face Dimensions for Flanged Control Valve Bodies
  S5.1 Instrumentation Symbols and Identification
  RP12.1 Electrical Instruments in Hazardous Atmospheres
  S12.4 Instrument for Reduction of Hazardous Area Classifications
  RP31.1 Specification, Installation and Calibration of Turbine Flowmeters
  RP201. Instruments, Gages, Thermocouples, Orifice Plates and Flanges, Control Valves, and Pressure Safety Valves
National Association of Corrosion Engineers:
  RP–01 Control of External Corrosion
National Fire Protection Association:
  6 Sprinklers, Fire Pumps and Water Tanks
  10 Installation of Portable Fire Extinguishers
  11 Foam Extinguishing System
  20 Centrifugal Fire Pumps
  37 Stationary Combustion Engine and Gas Turbine
  77 Static Electricity
  496 Purged Enclosures for Electrical Equipment in Hazardous Location
Steel Structures Painting Council:
  SP1–10 Cleaning Procedures

3.04 ENVIRONMENTAL

3.041 Government Regulations

Coast Guard:
  33CFR154 Large Oil Transfer Facilities
  33CFR156 Oil Transfer Operations
Environmental Protection Agency:
  National Environmental Policy Act
State of Louisiana:
  Environmental Protection Plan for Deep Draft Harbor
  Federal Clean Air Act Implementation
  Federal Noise Control Act Implementation
  Federal Water Pollution Control Act Implementation

3.05 COMMUNICATIONS

3.051 Government Regulations

Federal Communications Commission:

Rules and Regulations

3.052 Industry Standards

Electronic Industry Association:

TR–141 Microwave Relay System for Communications

TR–142 Microwave Housing Facilities

RS–152 Minimum standards for Land-Mobile communication F.M. or P.M. transmitters 25–470 MHZ

RS–158 Mechanical Consideration for Transmission Line in Microwave Relay Applications

RS–159 Mechanical Characteristics for Microwave Relay System Antennas and Passive Reflectors

RS–173 Emergency Stand-by Power Generators and Accessories for Microwave Systems

RS–195–A Electrical and Mechanical Characteristics for Microwave Relay System Antennas and Passive Reflectors

RS–199 Solid Dielectric Transmission Systems

RS–200 Circular Waveguide

RS–203 Microwave Transmission Systems

RS–204 Minimum standards for Land-Mobile communications FM or PM receivers

RS–210 Terminating and Signaling Equipment for Microwave Communications System—Part I Telephone Equipment

RS–222–A Structural Standards For Steel Antenna Towers and Antenna Supporting Structures

RS–225 Rigid Coaxial Transmission Lines 50 Ohms

RS–232 Interface between data terminal equipment and communication equipment employing serial data interchange

RS–237 Minimum standards Land-Mobile systems using FM or PM in the 25–470 MHZ frequency spectrum

RS–252 Baseband Characteristics of the Microwave Radio and Multiplex Equipment

RS–258 Semi-Flexible Air Dielectric Coaxial Cables and Connectors, 50 Ohms

RS–259 Rigid Coaxial Transmission Lines and Connectors, 75 Ohms

RS–261–A Rectangular Waveguides (WR3 to WR2300)

RS–271–A Waveguides Flanges—Pressurizable Contact Types for Waveguide Sizes WR90 and WR2300

RS–304 Rigid waveguides

RS–316 Minimum standards for portable/personal Land-Mobile communications FM or PM equipment 25–470 MHZ.

RS–329 Minimum standards for Land-Mobile communications antennas Part I—Base or fixed station antennas

RS–334 Signal quality at interface between data processing terminal equipment and synchronous data communications equipment for serial data transmission

RS–363 Standard for specifing signal quality for transmitting and receiving data processing terminal equipments using serial data transission at the interface with non-synchronous data communication equipment

RS–368 Frequency Multiplex Equipment

RS–374 Land Mobile selective signal standards

3.06 OTHER

3.061 Government Regulations

Coast Guard:

33CFR126 Handling of Explosives or other Dangerous Cargo within or Contiguous to Waterfront Facilities

Occupational Safety & Health Administration:

29CFR1910 Standards

Public Health Service:

Federal Drinking Water Standards

Municipal & Parish:
Applicable Rules, Ordinances
3.062 *Industry Recommended Practices*
International Oil Tanker & Terminal Safety Group.

Mr. Read. The location of offshore platforms and SPM complex 21 miles offshore is away from the potentially dangerous bottom mudslide areas such as those around the mouth of the Mississippi River, and clear of existing ship traffic.

The proposed navigation fairways and maneuvering areas are clear of existing production platforms.

Mooring safety precautions are being formalized for operations, and also as a part LOOP will undertake radar surveillance and monitoring of all tanker approaches in the fairway and to the marine terminal.

The pipelines from the marine terminal to the onshore storage facilities will be corrosion protected, wrapped, and anchored in concrete, and buried beneath the seabed using technology developed over many years of offshore pipeline installations and operations.

LOOP also proposes to install leak detection and reaction systems. Pipelines coming to shore will be equipped with custody transfer grade metering, both on the offshore platform and the onshore terminal.

These meters will be continously monitored by a computer located in the control building at the onshore terminal.

The storage tanks will be equipped with floating roofs to minimize venting of hydrocarbons to the atmosphere and a system of dikes, sumps and directed drainage will collect waste water to be treated before returning to the outside environment.

The entire tank farm area will be enclosed in a containment dike higher than the incidence of any storm driven tide expected during a 100-year period.

Pipelines in the area will be equipped with valve systems to isolate damage to pipes. Pumps will be available to clear damaged pipelines or staorge tanks, the entire facility will be equipped with both fixed and portable firefighting systems.

Although the potential for a major spill is greatly reduced, contingency plans must be adopted in the unlikely event of an oil spill.

Spilled oil must be contained and retrieved. Many private companies and public agencies are involved in extensive programs into the mechanics of spill clean-up in open waters.

Trained personnel and fast reaction clean-up equipment is presently available in the Gulf of Mexico.

Investment figures for a LOOP project include approximately $150 million for the offshore facility, including the pipelines, and $130 million for the onshore storage terminal.

A large diameter pipeline connecting the storage facility with the Capline terminal on the Mississippi River will require about $88 million more.

We are prepared to finance the project ourselves.

On March 30, 1973, in a presentation to the Louisiana Deep Draft Harbor and Terminal Authority, the State agency created by the legislature to promote and regulate deep draft port development in

Louisiana, LOOP requested our proposed terminal facility be included as phase 1 of the authority's development program.

The Louisiana statute requires the authority promulgate an environmental protection plan to insure protection of the environment throughout all phases of the authority's development program.

I will also submit for the committee a copy of the act creating the Louisiana Deep Draft Harbor and Terminal and outlining the environmental protection plan.

[The document follows:]

CHAPTER 35. DEEP DRAFT HARBOR AND TERMINAL AUTHORITY [NEW]

Sec.
3101. Purpose.
3102. Definitions.
3103. Jurisdiction; domicile.
3104. Board of commissioners; qualifications; selection; terms; vacancies; compensation.
3105. Duties of board; officers; rules; meetings; quorum.
3106. Annual reports; revenues dedicated to authority; revenue surplus audit; central listing of employees and investment of idle funds.
3107. Executive director; selection; duties; employees; compensation.
3108. Acquisition of sites; lease of stateowned waterbottoms.
3109. Powers.
3110. Protection of deepwater ports.
3111. Public contracts.
3112. Bonds; procedure for issuance.
3113. Environmental protection plan.
3114. Coordination and cooperation.

§ *3101. Purpose*

A. It is the object and purpose of this chapter to provide for the creation of a political subdivision of the State of Louisiana, possessing full corporate powers, known as the Deep Draft Harbor and Terminal Authority, hereinafter referred to as the "authority", to promote, plan, finance, develop, construct, control, operate, manage, maintain and modify a deep draft harbor and terminal within the jurisdiction of said authority and in order to promote the economic welfare of its citizens, and to provide the necessary facilities for docking, loading and unloading of vessels carrying liquid or dry bulk and energy cargoes. It is hereby declared to be in the public interest that this Deep Draft Harbor and Terminal Authority be created as a political subdivision of the State of Louisiana.

B. It is further the object and purpose of this chapter:

1. To promote the economic industrial well-being of the existing port authorities of the State of Louisiana and to promote interstate, national and international trade for the State of Louisiana, its subdivisions and the area served by the Mississippi River and its tributaries, and to provide that existing ports take such steps individually and collectively to assure the maintenance of the economic well-being of each port authority, as well as the whole;

2. To promote the industrial and petrochemical base of the Mississippi Valley region of the United States by providing adequate deep draft port facilities for the handling of the cargoes of deep draft vessels;

3. To promote, in addition to port operations, scientific, recreational, and all other uses of the deep draft harbor and terminal which shall be in the public interest;

4. To accommodate and plan for the technological innovations occurring in the worldwide and domestic shipping industry to increase efficiency and the flow of commerce through the deep draft harbor and terminal;

5. To protect environmental values and Louisiana's unique coastal marshland ecosystem through the adoption of an environmental protection plan;

6. To assert and protect Louisiana's economic, social and environmental interests in the development of any deep draft harbor and terminal outside the State of Louisiana where such development may have an impact upon the State of Louisiana;

7. The authority to constitute a political subdivision of the State of Louisiana and such functions exercised by the board empowered herein shall be deemed to be held as governmental functions of the State of Louisiana, as the exercise of the powers granted herein will, in all respcts, be to the benefit of

the people of the state, for the increase of their commerce and prosperity and for the improvement of their economic condition;

8. To assure that the authority shall not be required to pay any taxes or assessments on any property acquired or used by it under the provisions of this chapter or upon the income therefrom, and any bonds issued hereunder shall be serviced from the income of said facility and shall be exempt from taxation by the State of Louisiana, and by any municipal or political subdivision of the state.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ *3102. Definitions*

For the purposes of this chapter, the following definitions shall apply:

(1) "Deep draft harbor and terminal" means a structure, or series of structures or facility of any type emplaced in coastal waters and designed to accommodate the cargo or passengers of deep draft vessels whose draft is greater than the depths of typical inland harbors and waterways commonly used by ocean going traffic during the first half of the twentieth century, including all those structures and facilities functionally related thereto and necessary or useful to the operation thereof whether landward or seaward of the main structure or facility itself.

(2) "Authority development program" means all the phases of growth and development through which the concept of a deep draft harbor and terminal may go, including but not limited to promoting the concept, raising funds to support the program, planning the uses of the facility, selecting a site for the physical facility and support facilities, designing the structures, constructing the facility and the support facilities, operating and maintaining the facility, expanding or renovating the facility, modification and retirement of the facility, and any other phases through which authority development may proceed.

(3) "Environmental protection plan" means a written document, prepared in conformity with this law, which shall be a regulation of the Deep Draft Harbor and Terminal Authority which establishes those steps to be followed to insure the protection of the environment throughout all phases of the authority development program.

(4) "Three deepwater ports" means the board of commissioners of the Port of New Orleans, the Greater Baton Rouge Port Commission and the Lake Charles Harbor and Terminal District.

(5) "Three directors" means the director of the Louisiana Wildlife and Fisheries Commission, the director of the Louisiana State University Center for Wetland Resources and the executive director as created herein.

(6) "Facility" means any structure or improvement actively used on a regular basis in waterborne commerce.

(7) "Coastal waters of Louisiana" means those waters extending three nautical miles from the coastline, or beyond to the extent of the jurisdiction of the State of Louisiana.

Nothing contained herein shall be construed to affect Louisiana's claim to its tidelands or the location of Louisiana's coastline as interpreted by the State of Louisiana.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ *3103. Jurisdiction; domicile*

A. The authority shall have exclusive jurisdiction over the authority development program within the coastal waters of Louisiana. The jurisdiction of the authority shall not include or extend to the taking, control or operation of existing, proposed or future facilities of existing port authorities except by mutual agreement.

B. The authority shall have the right to acquire by lease or purchase water-bottoms inside and outside of the territorial limits of the State of Louisiana for use in the construction, operation or maintenance of the facilities functionally required, related, necessary or useful to the operation of the authority.

C. The domicile of the authority shall be in the city of New Orleans; however, by appropriate act of the board of commissioners the domicile may be relocated to an appropriate location within the structures and facilities constructed or acquired by the authority.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ *3104. Board of commissioners; qualifications; selection; terms; vacancies; compensation*

A. The authority shall be governed by a board of commissioners consisting of nine members chosen on the basis of their demonstrated experience in civic leadership and their stature and ability to act effectively for the best interests of Louisiana.

B. All commissioners shall be appointed by the governor. Two shall be selected from a list of nominees submitted by Louisiana's three deepwater ports, with each deepwater port recommending two nominees.

Two shall be selected from each of the three Public Service Commission districts in the State of Louisiana.

One of the members selected from the three Public Service Commission districts shall be selected for his primary interest in protecting the unique coastal environment of Louisiana.

One member shall be selected from the state at large.

Once a final determination is made as to the location of the deep draft harbor and terminal, the first vacancy occurring on the board shall be filled by appointment of a resident of a parish in which, or offshore from which, the deep draft harbor and terminal is to be located. This appointment shall be from a list of three names to be submitted by the governing authority of the parish in which, or offshore from which, the deep draft harbor and terminal is to be located. If the deep draft harbor and terminal is located in, or offshore from, more than one parish, then the governing authority of each such parish shall submit to the governor a list of three names and from the lists so submitted the governor shall select said appointee.

C. Each of the nine commissioners shall serve a five year term, except the initial appointees.

A commissioner may not serve more than two consecutive five year terms on the board of commissioners.

The first nine appointments shall be for terms of one member for one year, two for two years, two for three years, two for four years, and two for five years. The governor shall exercise his discretion as to which nominees to appoint to the initial shortened terms. Thereafter, all commissioners appointed as herein provided shall serve five year terms.

D. All vacancies shall be filled for the unexpired term in the same manner as the appointment originally made, except as herein provided. A commissioner may be removed by the governor for just cause.

E. The members of the board of commissioners shall serve without compensation, but shall be reimbursed for travel expenses incurred in attending meetings, at rates and standards as promulgated by the American Automobile Association or a comparable recognized standard.

Added by Acts 1792, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ *3105. Duties of board; officers; rules; meetings; quorum*

A. The board of commissioners shall be the governing body of the authority with full power to promulgate rules and regulations for the maintenance and operation of said authority.

B. The board of commissioners shall be a governing body of laymen. It shall formulate general policy. It shall decide upon all matter relating to the authority development program. It shall adopt an annual operating and capital budget.

C. The commissioners shall elect a president annually from among themselves.

D. The executive director, as chosen by the commissioners, shall be the secretary of the board.

E. The board of commissioners shall prescribe its own rules, which shall be adopted and promulgated in accordance with law.

F. The board of commissioners shall meet at least once every sixty days or upon the written request of three members, or upon the written request of the president.

G. All matters to be acted upon by the board of commissioners shall require the affirmative vote of at least five commissioners, with the exception that the affirmative vote of not less than six commissioners shall be required to select the executive director.

Added by Acts 1972, No. 444, § 1.

§ *3106. Annual reports; revenues dedicated to authority; revenue surplus audit; central listing of employees and investment of idle funds*

A. The board of commissioners shall make an annual report to the governor showing all receipts and disbursements of the board; the number of arrivals and departures of vessels and their tonnage; the exports and imports passing through the authority; the general condition of the authority and its structures, facilities and other properties; and make such recommendations for its development; welfare and management as may seem advisable.

B. All revenues generated by the authority are hereby dedicated to the authority to be used to further the purpose of their chapter subject to the limitations stated herein.

Any revenues of the authority derived from any source whatsoever remaining at the end of each fiscal year, after the payment and satisfaction of all obligations of the authority under the terms of any resolution or resolutions authorizing the issuance of bonds hereunder, and after paying all expenses of operating and maintaining the authority, providing for renewal or replacement thereof, providing adequate reserves for continuous operation of the authority, providing for the acquisition or construction of improvements to such facilities and the purchase of equipment and furnishings therefor, shall be considered as surplus. Said surplus shall be turned over to the general fund of the State of Louisiana for the use and benefit of its citizens.

C. The fiscal affairs of the authority shall not be subject in any respect, to the authority, control or supervision of any regulating body of the state or any political subdivision thereof, but its books and record shall be subject to audit annually by the legislative auditor and its employees shall be listed on the central listing of state employees and it shall invest its idle funds in accordance with the Investment of Idle Funds Act and it shall be subject to the provisions of the Code of Ethics.

Added by Acts 1972, No. 444, § 1.

§ *3107. Executive director; selection; duties; employees; compensation*

A. The board of commissioners shall select an executive director who shall exercise all control over all executive functions and the general operation of the authority. The executive director shall serve at the pleasure of the board. All employees of the authority shall be responsible to the executive director who shall organize the personnel employed by the authority in the most efficient manner to accomplish the purposes of the authority as provided in this chapter and by regulations established by the authority's board.

B. The executive director, in addition to his usual functions, shall be secretary to the board of commissioners. The board of commissioners shall fix the compensation of the executive director.

C. Within six months after operation of the port authority has commenced, the executive director, with the advice and consent of the board of commissioners of the port authority, shall submit a plan of classified civil service for all employees of the authority except the board of commissioners, the executive director, an assistant executive director, an executive secretary to the executive director, and professional employees hired on a contract basis.

Added by Acts 1972, No. 444, § 1.

§ *3108. Acquisition of sites; lease of stateowned waterbottoms*

A. To enable the authority to perform the work herein provided, the State of Louisiana, acting by and through the register of state lands, is hereby authorized, empowered and directed to grant to the authority a lease on state-owned waterbottoms in the Gulf of Mexico which are selected by the authority as sites for the deed draft harbor and terminal; provided, however, that the mineral rights on any and all state lands shall be reserved to the State of Louisiana.

Upon receipt of a request from the governing body of the authority describing the lands to be leased by the authority, it is hereby made the mandatory duty of the register of state lands to issue a certificate of title evidencing the lease of the land to the authority as described in the request.

B. The register of state lands shall lease the selected tracts to the authority for five dollars per acre per annum.

C. All such leases shall be for a term of forty years, but the legislature may reevaluate tne rental payments upward or downward to reflect changing economic conditions.

D. All proceeds arising from the sale of such leases of stateowned waterbottoms shall be paid by the authority to the state treasurer and shall become part of the general fund of the State of Louisiana.

E. Nothing in this part is intended to authorize the authority to lease stateowned waterbottoms for he exploration, development and production of oil, gas, sulphur or other minerals or for the cultivation or production of marine resources or detract from the authority of the State Mineral Board and/or Lousiana Wild Life and Fisheries Commission to lease for such purposes. However, tracts once leased to the Deep Draft Harbor and Terminal Authority may not be leased by the State Mineral Board or the Louisiana Wild Life and Fisheries Commission without the express consent of the authority, unless it can be shown by the state mineral board or the Louisiana Wild Life and Fisheries Commission, by clear and convincing evidence, that such lease or leases will not adversely affect present or future authority operations.

Added by Acts 1972, No. 444, § 1.

§ *3109. Powers*

A. The authority shall be vested with exclusive and plenary authority to do any and all things necessary or proper for the authority to promote, plan, finance, develop, construct, control, operate, manage, maintain and modify the authority development program.

B. To assert Louisiana's interest in any deep draft harbor and terminal development in proximity to the Louisiana coast, the authority is empowered to negotiate with and enter into contracts, compacts or other agreements with agencies, bureaus or other divisions of the federal government or other states of the United States concerning the authority development program, including jurisdictional aspects of the location of the deep draft harbor and terminal, sharing of revenues derived from the operation of the deep draft harbor and terminal and promulgation and enforcement of regulations governing authority operations.

C. The authority is granted all powers capable of being delegated by the legislature under Article XIV, Section 31 of the Constitution of the state, including but not limited to authority:

1. To own, construct, operate, maintain and lease docks, wharves, sheds, elevators, pipelines, pumping stations and facilities, storage facilities, housing and food facilities, heliport, locks, slips, laterals, basins, warehouses and all other property, structures, equipment and facilities, including belt and connecting lines of railroads and works of public improvement necessary or useful for Deep Draft Harbor and Terminal purposes.

2. To dredge and maintain shipways, channels, slips, basins and turning basins.

3. To establish, operate and maintain in cooperation with the federal government, the State of Louisiana and its various agencies, subdivisions and public bodies, navigable waterway systems.

4. To acquire by expropriation any real property in fee, leaving the ownership of any minerals or mineral rights in the former owners, and the prescription of nonuse shall not run against said minerals or mineral rights. In the event of expropriation, the compensation to be paid shall be the actual market value of the property at the time of taking. In the event of the acquisition of a servitude, or use of any stateowned waterbottoms on which there has been granted an oyster lease by the Louisiana Wildlife and Fisheries Commission, the private oyster lessee shall be reimbursed by the authority for the actual market value of said lease.

5. To borrow from any person or corporation using or renting any land or dock or warehouse or any facility of the authority such sums as shall be necessary to improve the same according to plans and specifications approved by the authority, and to erect and construct such improvement, and agree that the loan therefor shall be liquidated by deducting from the rent, dock, wharf

or toll charges payable for such property, a percentage thereof to be agreed on, subject, however, to any covenants or agreements made with the holders of revenue bonds issued under the authority set forth in R.S. 34:3108.

6. To collect tolls and fees.

7. To borrow funds for the business of the authority.

8. To select an official journal for the publication of the official acts of the authority.

9. To mortgage properties constructed or acquired by said authority and to mortgage and pledge any lease or leases and the rents, income and other advantages arising out of any lease or leases granted, assigned or subleased by the authority.

D. The authority is hereby empowered to take all necessary steps to protect Louisiana's unique coastal environment from any short-term or long-term damage or harm which might occur from any aspect of the authority development program.

E. The authority may contract with any agency, public or private, to provide for public utilities on such terms as are agreed upon the authority and the respective utilities for the financing, construction and extension of sewerage, water, drainage, electricity, gas and other necessary public utilities in and through said development.

F. Said authority may lease or sublease lands leased from the State of Louisiana and is authorized to negotiate and enter contracts or agreements with any public or private individual, or corporation, for the construction and operation of a petroleum terminal as an interstate common carrier.

Added by Acts 1972, No. 441, § 1.

§ *3110. Protection of deepwater ports*

A. To prevent impairment of the bonds of the three deepwater ports which are backed by the full faith and credit of the state, and to recognize the existing authority of and functions performed by the established ports and harbors of Louisiana, it is hereby recognized that the function, power and authority of the various existing port authorities established pursuant to Article 14, Section 31 of the Louisiana Constitution, and others established by specific constitutional provision are not to be diminished by the jurisdiction and powers exercised by the Deep Draft Harbor and Terminal Authority except as provided in this chapter.

B. The authority may enter into intergovernmental contract agreements with existing port authorities, individually, or with any other parish, city, municipality or subdivision of the state, and may engage jointly in the exercise of any power, the making of any improvements which each of the participating authorities may exercise or undertake individually under any provisions of general or special law.

C. The authority, in establishing or enacting its rates and charges for bulk cargo shall consider the overall economic impact on the economy of the three deepwater ports, and its charges and rates shall be compensatory.

D. The authority shall not engage in the handling of break bulk or general cargo without the prior written agreement of the three deepwater ports, which agreement, among other provisions, may provide for use of existing port facilities, rates, wharfage fees and other matters of mutual interest.

Added by Acts 1972, No. 444, § 1.

§ *3111. Public contracts*

A. All public works exceeding the sum of ten thousand dollars, including both labor and materials, to be performed by the authority shall be governed by R.S. 38:2211, et seq. However, this provisions shall not apply in cases of extreme public emergency, where the authority has certified such public emergency, but in such case notice of such public emergency shall be published in the official journal of the authority within ten days thereof.

B. Where the authority deems it advisable and in the public interest to purchase machinery, equipment or vehicles of certain makes, kinds or types, the advertisement may specify the makes, kinds or types and, after the advertising, the authority may purchase those makes, kinds or types, but they shall not pay more than the actual market price for the machinery, equipment or vehicles.

Added by Acts 1972, No. 444, § 1.

§ *3112. Bonds; procedure for issuance*

A. The authority is hereby authorized to incur debt and issue bonds for its needs in the manner herein provided.

B. The authority is granted the power to incur debt and issue bonds by any of the means authorized by the constitution and laws of the State of Louisiana, including but without limiting the generality of the foregoing Article XIV, section 31, and Article XIV, section 1, and paragraphs (b.2) and (b.3) of the Louisiana Constitution.

C. Any revenue producing wharf, dock, warehouse, elevator, industrial facility or other structure owned by or to be acquired by the authority from proceeds of bonds issued by it is hereby declared to be a revenue producing public utility as that term is used and defined by the constitution and laws of the state in connection with the issuance of revenue bonds of political subdivisions of the state.

D. As an additional grant of authority beyond other provisions of the constitution, the authority is authorized, with the approval of the state bond and tax board, to issue negotiable bonds for any purpose within their delegated authority, and to pledge for the payment of the principal and interest of such negotiable bonds the income and revenues derived or to be derived from the properties and facilities maintained and operated by them or received by the authority from other sources.

E. Such negotiable bonds may be further secured by a conventional mortgage upon any or all of the property constructed or acquired, or to be constructed or acquired by them.

F. To further secure such negotiable bonds the authority may apply in whole or part any money received by gift, grant, donation or otherwise from the United States, the State of Louisiana, or any political subdivision thereof, unless otherwise provided by terms of the gift, devise, donation or similar grant.

G. Such bonds shall be authorized by a resolution of the board of commissioners of the authority and shall be of such series, bear such date or dates, mature at such time or times not exceeding forty years from their respective dates, bear interest at such rate or rates per annum, payable at such time or times, be in such denominations, be in such form, either coupon or full registered without coupons, carrying such registration and exchangeability privilege, be payable in such medium of payment and at such place or places, be subject to such terms of redemption not exceeding one hundred five percent of the principal amount thereof, and be entitled to such priority on the revenues of the authority as such resolution or resolutions may provide. The bonds shall be signed by such officers as the authority shall determine, and coupon bonds shall have attached thereto interest coupons bearing the facsimile signatures of such officer or officers of the authority as it shall designate. Any such bonds may be issued and delivered, notwithstanding that one or more of the officers signing such bonds or the officers whose facsimile signature or signatures may be upon the coupons shall have ceased to be such officer or officers at the time such bonds shall actually have been delivered. Said bonds shall be sold for not less than par and accrued interest to the highest bidder at a public sale after advertisement by the authority at least seven days in advance of the date of sale, in newspapers or financial journals published at such places as the authority may determine, reserving to the authority the right to reject any and all bids and to readvertise for bids. If, after advertisment as hereinabove provided, no bids are received, or if such bids as are received are considered in the discretion of the board of commissioners of the authority to be unsatisfactory, then and in that event the board of commissioners may publicly negotiate for the sale of such bonds without further advertisement. No proceedings in respect to the issuance of any such bonds shall be necessary except such as are contemplated by this section.

H. For a period of thirty days from the date of publication of the resolution authorizing the issuance of bonds hereunder, any persons in interest shall have the right to contest the legality of the resolution and the legality of the bond issue for any cause after which time no one shall have any cause or right of action to contest the legality of said resolution or of the bonds authorized thereby for any cause whatsoever. If no suit, action or proceeding is begun contesting the validity of the bond issue within the thirty days herein prescribed, the authority to issue the bonds and to provide for the payment thereof, and the legality thereof and all of the provisions of the resolution authorizing the issuance of the bonds shall be conclusively presumed, and no court shall have authority to inquire into such matters.

I. Such bonds shall have all the qualities of negotiable instruments under the law merchant and the Negotiable Instruments Law of the State of Louisiana, and shall be exempt from income and all other taxation of the State of Louisiana.

J. No bonds as herein described shall be authorized, issued or sold except in accordance with specific authorizations hereafter granted by the legislature for each issue.

Added by Acts 1972, No. 444, § 1.

§ *3113. Environmental protection plan*

A. Throughout all aspects of the authority development program there shall be in existence an environmental protection plan, the details of which shall be followed in all respects by the executive director in carrying out any aspect of the authority development program.

B. The environmental protection plan shall be formulated by the three directors, as herein defined, with the advice and consent of the board of commissioners of the authority.

C. The environmental protection plan shall be promulgated by the executive director under the rule-making procedures of the Louisiana Administrative Procedure Act of R.S. 49:951–49:966.

D. The environmental protection plan shalll be promulgated within a reasonable time after the appointment of the executive director, but in no event more than eighteen months after the effective date of this chapter. An acting executive director or a temporary executive director may fulfill this function if a permanent executive director is not as yet appointed.

E. The environmental protection plan may be amended at any time in accordance with the provisions of the Louisiana Administrative Procedure Act, to reflect changes in the authority development program. Initiation for changes may come from any of the three directors or any interested person.

F. In preparing the environmental protection plan, or any amendment thereto, at any time during the authority development program, the three directors shall make every effort to reach a consensus. If they are unable to agree, each shall proffer his proposed environmental protection plan and present it to the board of commissioners for its consideration. Each of the three directors shall present detalied comments to the board of commissioners, with recommendations as to the best environmental protection plan. After receiving and studying the recommendations, the board of commissioners shall decide which plan or combination of plans shall be adopted and promulgated.

G. The environmental protection plan shall be an integral part of the authority development program. Costs incurred to develop the initial plan, or any amendments to it, shall be considered an internal cost of the authority development program and shall be considered a cost to the same extent that economic, engineering or promotional programs are considered costs. The three directors shall agree on the appropriate level of funding for the developing of the authority environmental protection plan, prepare any amendments thereto, and carry out the requirements of the plan. To the extent possible, federal funds shall be sought to assist in this effort.

H. The best talent available shall be sought to perform the studies and surveys necessary to develop an environmental protection plan and carry out its requirements in accordance with this chapter. To the extent possible, university-based, public and private researchers in Louisiana shall be utilized. In all cases, the research in support of the environmental protection plan shall be coordinated by agreement of the three directors. The results of all research done in support of the environmental protection plan shall be open to the public and available to any interested person.

I. The environmental protection plan shall contain specific provisions implementing Subsection J below. If specific provisions cannot be set forth due to uncertainties in the authority development program, then the environmental protection plan shall state in specific terms the uncertainties which do exist at the time the plan is promulgated, and why the uncertainties would make the inclusion of specific provisions in the plan premature. The authority environmental protection plan shall contain a separate chapter for each of the paragraphs of Subsection J below and any other chapters necessary to meet the requirements of this chapter.

J. The environmental protection plan shall:

(1) Summarize the salient feature of an inventory of all potential and actual stresses on the natural and human environment which can be reasonably expected to occur in pursuing the authority development program. Consideration shall be given to stresses which have occurred in other parts of the country and the world where similar functional operations were being performed. Consideration shall be given to the peculiarities of Louisiana's coastal environment. The inventory of potential and actual stresses shall include a prediction of the stress on the coastal environment of major accidents which could logically be expected to occur throughout the authority development program, even though all precautions against such accidents have been taken.

(2) Describe the essential features of existing environmental data upon which the selection of a site for a deep draft harbor and terminal may be based. Indicate how this data has been analyzed and compared with te inventory of potential and actual stresses required i nthe above paragraph so that the site selected will result in the least total stress on the environment. Indicate how economic considerations are compared with the assessed total stress on the environment to arrive at the best economic-ecologic formula for determination of a site for the deep draft harbor and terminal. State the location and availability of the environmental data upon which these determinations are based.

(3) State how the deep draft harbor and terminal facillity design minimizes potential environmental damage, considers environmental factors as a positive part of the design, and controls long-term development so that growth and additions to the deep draft harbor and terminal do not result in random growth or in gradual environmental deterioration.

(4) Present details of how the operational aspects of the authority development program will be conducted so as to minimize environmental problems, including but not limited to a monitoring program by the Louisiana Wild Life and Fisheries Commission; establishment of constructional and operational guidelines for environmental protection; strong enforcement provisions, and mechanisms to insure cleanup of accidental spills by technical means, with a surety bond to insure performance. The plan shall consider the circumstances which may justify the temporary cessation of the port activities.

(5) Provide procedures for the funding of projects to be paid for by the authority to the Louisiana Wild Life and Fisheries Commission or any agency designated by the governor which shall compensate the coastal environment for loss that may be sustained through the stresses on the environment created by the authority development program.

(6) Analyze ongoing programs of the federal, state and local governments designed to protect the coastal environment and to insure that there is no unnecessary duplication of effort and to insure that cooperation and coordination of environmental protection measures are achieved. The opinion of all agencies with a responsibility for monitoring the coastal environment shall be sought with regard to this coastal protection plan prior to its promulgation, to determine if there are incompatibilities between specific provisions of this measure and the requirements of other rules and regulations.

K. Nothing in this section is intended to diminish in any way the authority of the Louisiana Wild Life and Fisheries Commission.

Added by Acts 1972, No. 444, § 1.

§ *3114. Coordination and cooperation*

A. It is the policy of this chapter that the authority development program be pursued so that there is full coordination and cooperation between agencies and groups that have complementing or overlapping interests and the authority. It is not the policy of this chapter that the authority development program be pursued independently and with a view toward narrow, short-term interests.

B. The board of commissioners shall take affirmative steps to fully coordinate all aspects of the authority development program with the Louisiana Advisory Commission on Coastal and Marine Resources (Act No. 35 of 1971) or its successor group, which is charged with the development of a coastal zone management plan for the state.

C. The board of commissioners shal take affirmative steps to insure that the authority development program is coordinated into the planning programs of other modes of transportation, to include rail, road, waterway, air and pipeline, so that there is a long-term and orderly pursuit of transportation services in the coastal zone which are interrelated and coordinated so as to achieve the most efficient and economical transportation program that is feasible and that will be least destructive of other values in the state.

D. The board of commissioners shall insure that the appropriate federal agencies which are required by federal law to plan or regulate transportation facilities or programs are consulted regularly and are fully involved in the authority development program where appropriate.

Added by Acts 1972, No. 444, § 1.

Mr. Read. LOOP has recently initiated two major studies leading to a detailed environmental assessment.

We will submit this report as well as all basic data used to prepare the report to the Federal agency designated as the licensing authority.

(The report may be found in the files of the committee.)

Mr. Read. The objective of LOOP's program is to provide a comprehensive description of existing baseline conditions, and to predict the impact of construction and operation of the proposed facility on these conditions.

The study will be the most comprehensive ever undertaken in Louisiana's coastal zone, and the data will ultimately revert to the public domain for use by all citizens with an interest in this area.

For this study, the proposed facility has been divided into two basic components, the area of the offshore unloading terminal, including the pipeline routes to shore and the area of the tank farm, including the adjacent bays and estuaries.

A study of the pipeline route from the tank farm to the Capline is also being undertaken. Three organizations have then chosen to conduct these studies, Nicholls State located at Thibodeaux, La. will be responsible for all offshore chemical and biological investigations.

The area to be studied by Nicholls consists of the water located approximately 5 miles on either side of the proposed offshore terminal and the pipeline route from the unloading area into the shore.

The Louisiana State University Center for Wetland Resources has been chosen to conduct the offshore physical oceanographic studies and the complete onshore environmental assessment of the tank farm site, the adjacent bays and estuaries.

As a part of the oceanographic study a 12-month general survey will be made of the seasonal variability of the water circulation patterns of the area of the Gulf of Mexico affected by our porposed facility.

In addition, a detailed study will be made utilizing moored current meters to determine the velocity structure in the vicinity of the proposed offshore terminal.

At the close of the 12-month program, LSU will prepare the final report and interpret all data and results including those data which were obtained by Nicholls State.

In addition to Nicholls State and LSU, LOOP has also retained the firm of Dames and Moore. They will provide guidance for environmental report planning and preparation.

The total cost of LOOP's environmental assessment program will be as much as $1 million.

Madam Chairman, a common objective of State and Federal governments and the oil industry must be to assure the United States the ability to receive sufficient supplies of foreign petroleum to meet the energy requirements.

It is our position that Federal legislation for offshore ports should take the form of a single-purpose licensing law. The most pressing need is the designation of a licensing agency which would be the focal point for an environmental assessment under the National Environmental Policy Act.

House bill 5898 appears to adopt this concept. House bill 5091 does not.

We concur with Mrs. Sullivan's statement at the commencement of these hearings that neither of these bills, as written, meets the overall need.

If the committee would find it useful, we would be pleased to submit our analysis of the necessary matters to be covered in legislation for offshore oil ports, and our comments on these two bills, as well as H.R. 7501, which is proposed by the Department of Interior.

The CHAIRMAN. I think that would be most helpful, because we are seeking a way to get the proper kind of legislation that is workable and understood.

Mr. READ. Thank you.

(The analysis mentioned follows herewith:)

ANALYSIS OF H. R. 5091, 5898 AND 7501

H.R. 5091

The purpose is to provide for the fullest possible protection of the marine environment to prevent adverse impact which may result from construction and operation of offshore facilities such as ports and terminals, powerplants, airports, and research platforms.

Protection of the marine environment is an important consideration; it is, however, only one of several factors in environmental protection. Under the National Environmental Policy Act total environmental assessment would be required through the Federal agency designated by Congress to grant licenses for such facilities; that agency would be the focal point for determining environmental impact of a project.

Each other Federal agency with special expertise concerning the environmental impact of action proposed by the focal point agency has a duty to comment upon such impact. Logically, if there is a justification for the certification responsibility which this bill would propose to be assumed by the Department of Commerce, a similar justification can be reasoned for each other agency and department of the Federal government which has special expertise on any aspects of the environmental impact of projects described in the bill. If all agencies and departments were to have certification responsibility the application of the certificate procedure would reach the same result as is intended under the National Environmental Policy Act.

Since the agency or department with authorization power from Congress would be the focal point in environmental assessment under the National Environmental Policy Act, delay in designation of such an agency results in delay in commencement of environmental impact assessment.

H.R. 5898

This bill recognizes the need for constructive action to permit receipt of crude oil and petroleum products through offshore facilities beyond territorial waters to help satisfy the nation's energy needs. It would establish the Department of Commerce as the focal point for environmental assessment under the National Environmental Policy Act. It specifies matters which would be required to be considered in the issuance of a license. In these respects the bill is directed toward a solution of the particular problem which Congress must aid in solving.

There are some matters which are not covered in the bill and which probably need to be covered. It seems that there should be an express recognition that virtually all existing United States port facilities are unable to accommodate the large ships carrying crude oil and petroleum products and that there is a national interest in supplying energy requirements through receipt of the crude oil and petroleum products carried in such vessels.

We think it would be helpful to have provisions concerning the qualifications of applicants and specifications as to the content of applications.

A provision concerning the term of a license would be desirable and we recommend one which would include a limited initial period for construction and a secondary period to be for so long as an offshore oil port is used, maintained and operated.

In our judgment particular consideration should be given to providing for the use of the adjudicatory public hearing on the record for passing upon applications for licenses, recognizing that the probable number of applications would be relatively small. Certainly the necessity for a broad regulatory system is not present. Judicial review should be available to parties who participated in the administrative proceedings, who are aggrieved by the decision, and who otherwise have standing to use.

There are no provisions regarding compensation for injury of workmen, navigational safety, labor disputes or general judicial jurisdiction. These subjects were covered in the Outer Continental Shelf Lands Act. The situation to be dealt with in this instance is analogous to the one which existed then. These subjects ought therefore to be covered in the Act. Navigational safety features would involve the Coast Guard to a substantial extent.

The Constitution and laws and treaties of the United States should be extended in a manner that would treat the facilities as being located in an area of exclusive Federal jurisdiction within a state. There should be no inference of the possible need for additional treaties to make the legislation viable. The power of Congress to legislate on this subject is, in our opinion, clear in existing conventions to which the United States is a party.

The Convention on the High Seas, in Article 2, guarantees freedom of the seas; it follows that this guarantee encompasses the enjoyment of the benefits flowing from freedom of the seas, including being able to participate in the benefits of movement of crude oil and petroleum products in ships which cannot come into existing conventional ports. That this is intended by the Convention is demonstrated by the declaration in Article 3 that nations having no seacoast should have free access to the sea in order to enjoy the freedom of the seas on equal terms with coastal nations. Certainly, if a landlocked nation must be permitted access to the sea, one whose ports cannot receive large ships is permitted a reasonable use of the high seas in order to realize the benefits of large ships. This cannot be said to be an attempt to subject a part of the high seas to the sovereignty of the United States, an action proscribed by the Convention on the High Seas.

We believe that a coastal nation may exercise reasonable control over the operation of necessary facilities on the high seas in proximity to its coast—that which is essential to insure that neither the rights of the licensing coastal nation nor the rights of all other nations in freedom of the high seas are adversely affected. Certainly the parties to the conventions on the sea did not intend them to be impediments to protection of the marine environment of the high seas or the coastal or inland waters of a coastal nation.

Application of Part I of the Interstate Commerce Act to the transportation of crude oil or petroleum products by pipeline is logical because the regulatory system already exists and pipeline transportation is a very significant part of the operation of an offshore oil port. It would effectively regulate the operation of the marine terminal if crude oil or petroleum products must come ashore through pipelines connected to the marine facilities.

H.R. 7501

This bill proposes a licensing law. It would establish the Department of the interior as the focal point for environmental assessment under the National Environmental Policy Act. It addresses the subject of consideration of the interests of host states. It recognizes the need for constructive action to permit receipt of crude oil and petroleum products in an economically sound manner to help satisfy the nation's energy needs. In all of these respects, as with H. R. 5898, the bill is directed toward a solution of the problem which we believe the Congress must aid in solving.

There are some features of the bill which we would prefer to see handled in a different fashion.

The bill begins with an amendment to the Outer Continental Shelf Lands Act to incorporate an accommodation provision and to broaden the provisions concerning pipelines. If an accommodations provision is necessary it can be incorporated into the licensing law without amendment of the Outer Continental Shelf Lands Act. The pipelines to carry crude oil or petroleum products from the marine facilities of a Deep Draft Petroleum Tanker Unloading Terminal should be included in the license rather than be separately authorized. These pipelines are an integral part of the facility; their only reasonably practical use is for carrying crude oil or petroleum products unloaded from large tankers.

This bill is a broad scale commodities bill and provides for operations in import, export and coastwise trade. The particular problem to be solved at this time is receipt of crude oil and petroleum products, a single purpose. A single-purpose Act would therefore seem apropriate. The term "Offshore Oil Port" could be substituted for the term "Deep Water Port Facility" to show the single purpose of the Act and the definition of this term could reflect that the single purpose is to provide for the unloading of crude oil and petroleum products beyond the Territorial Sea. If found to be necessary to solve other problems in foreign trade of the United States, additional Acts can be designed to cover the specific needs and considered by the Congress.

Section 103(c) seems unrelated to the regulation of offshore ports as a reasonable use of the high seas. Whatever relationships economics of commodities and transportation markets in the United States have to legislation for a reasonable use of the high seas are remote, if at all existent.

In other respects our observations on H. R. 5898 are also pertinent to H. R. 7501.

Mr. Read. We suggest generally that existing statutes not be amended in a patchwork fashion; that the licensing procedure be as simple as possible, and result in an expeditious administrative decision following concomitant considerations of energy needs and the environmental impact; that a suitable means for consideration of the interests of the respective States be found, and that there be specific extension of laws as are necessary to the offshore oil port.

In conclusion, there is a real and pressing need for governmental action which will establish procedures under which suitably located deepwater terminal facilities can be constructed without unnecessary delay.

The urgency of this need is highlighted by the rapid growth in the United States of petroleum imports and the time lag between a commitment to construct a terminal and its actual operation.

I would like to again thank the distinguished members of this committee for their interest, and would be happy to answer any questions you may have concerning our project.

Thank you.

The Chairman. That is an excellent statement, Mr. Read, and I think I will read it closely because it has given us more information that we need than we have had up till now, and with the experiences that you have had, I think this is a very complete statement.

I think before we start to question you, I would like to have Mr. Arnold read his statement, and then we will question both of you together.

STATEMENT OF J. E. ARNOLD, MANAGER, DISTRIBUTION, PHILLIPS PETROLEUM CO. AND CHAIRMAN, SEADOCK PUBLIC AFFAIRS COMMITTEE

Mr. Arnold. Thank you.

Madam Chairman, I am J. E. Arnold, manager of distribution of Phillips Petroleum Co., and chairman of the Seadock Public Affairs Committee.

I am pleased to be here today on behalf of Seadock.

The purpose of the Seadock project is to develop a deepwater facility capable of unloading petroleum imports from the new 200,000 to 500,000 deadweight ton class of very large crude carrier or VLCC. The proposed location is 25 to 30 miles offshore of Freeport, Tex.

We believe that Seadock is in the public interest because it offers significant environmental advantages as well as cost savings to the consumer.

Today, I will describe what we propose to do and bring you up to date on the status of our project.

Seadock's membership presently includes 11 oil companies and one petrochemical company. The oil companies are Amoco, Atlantic Richfield, Cities Service, Continental, Crown Central, Exxon, Mobil, Phillips, Shell, Texaco, and Toronto Pipeline.

The petrochemical company is Dow Chemical.

These companies operate about 2.7 million barrels per day of the total 3.3 million barrels per day of refining capacity located in the western Louisiana and Texas gulf coast area.

Seadock will be financed by private industry and no Federal subsidy will be required. Industry has the technical expertise and financial ability to design, build, and operate and SEADOCK terminal, and we believe this is the role which industry should play.

Seadock will be a common carrier and provide a service to all who need to use it, both owners and nonowners alike. It will publish and file rules and regulations which are common to all its shippers. Its operations, including tariff changes, will be regulated by the Interstate Commerce Commission.

Although membership in Seadock is open, and we expect other companies to join the project, we are trying to anticipate the needs of those companies who have not chosen to participate by designing extra capacity into the system and engineering the means for future expansion.

Today I will discuss four main topics. First, I will briefly review the long term need and industry logistics related to Seadock. Then, I will describe in more detail the Seadock project and its operations.

Next, I will discuss the positive effects that we believe the combination of VLCC's and deepwater terminals will have on our economy and environment.

And, finally, I will close with some comments pertaining to the type of Federal legislation which we believe is needed to make the Seadock project a reality.

LONG TERM NEED FOR DEEPWATER TERMINALS

Deepwater terminals will supply a need that exists not only during the next decade but for many years beyond. Based on the recent 2-year study of the National Petroleum Council, nuclear power and snythetic fuels are expected to supply 16 percent of total U.S. petroleum demand by 1985, based on the most optimistic assumptions possible, considering the problems being encountered in siting and construction.

This compared to nuclear power's approximate 1 percent share of total energy demand today. Despite this rapid growth in other fuels, petroleum imports are expected to reach 15 million bbl/d by 1985.

Hopefully, during the decade following 1985, other fuels will be able to slow down the growth rate of oil imports, but it is highly unlikely that the volume of oil imports could be held constant during this period, much less be reduced. The need for deepwater terminal facilities should exist throughout the balance of this century.

CRUDE AND PRODUCT LOGISTICS

Due to the current high level of overwater crude imports and somewhat declining domestic production, deepwater terminals are needed to supply existing refinery capacity as well as expansions and new refineries.

The crude oil imported through Seadock will be utilized by Gulf Coast and mid-continent refineries. This will be accomplished by permitting crude oil currently flowing to the Gulf Coast to be diverted through existing pipelines to midcontinent refineries.

In addition, existing pipelines may be reversed, and at least one new large throughput pipeline is being considered to directly move crude oil from Seadock to the Midwest. It is estimated that about 1 million bbl/d out of the 3 million bbl/d of crude oil expected to move through Seadock in 1980 will effectively supply Midwest refineries. Total petroleum imports are projected at 10.5 million bbl/d by 1980.

Products refined on the Gulf Coast from crude oil handled through Seadock will also be moved to other areas of the U.S., such as the Midwest, Detroit, and Chicago areas, the Southeast, and Atlantic Coast.

Today, over 50 percent of the petroleum products processed on the Gulf Coast are transported to these other areas, and this is expected to continue in the future even with significant refinery growth in the Northeast.

EFFECT ON EXISTING PORTS

Deepwater terminals will complement existing port facilities and encourage their growth by providing petroleum raw materials at economical transportation costs to existing refineries, petrochemical plants and industries. Moreover, movements of finished products (including refined products, chemicals, grains, etc.) and specialized feedstocks through existing ports are expected to increase with or without deepwater terminals.

Separate from the deepwater terminal legislation, attention needs to be directed toward modernization and expansion of existing ports to handle anticipated increasing commerce.

Some proponents of deepwater terminals have advocated superports which would handle dry bulk products, such as iron ore, coal and grain, as well as petroleum. We do not favor multiuse deepwater terminals.

Most studies of this concept indicate that there is relatively little economic incentive for using superports dor dry bulk products, since they move in relatively small quantities compared to petroleum, and because their point of origin and destination are much more diverse.

In addition, the majority of dry bulk carriers have shallow enough drafts to permit the use of existing ports. Multipurpose ports pose added environmental risk since the additional ships with their different types of cargo would cause both congestion and complication of equipment and operating procedures, resulting in an increased possibility of accident.

Since human error is the major cause of oil spills, simplification of operating procedures is an important factor in reducing the chances of an accident.

As previously mentioned, separate consideration should be given to dry bulk products through modernization of existing ports while deepwater terminal legislation should be directed toward single-purpose petroleum facilities.

THE SEADOCK PROJECT

Seadock has chosen the single point mooring or SPM technique for our terminal. With this system, the tanker moors at a buoy and oil is then pumped from the tanker through a floating hose to an SPM and from there into an undersea buried pipeline to shore.

I would like to point out that this is a proven concept since over 100 SPM's have been installed and successfully operated worldwide since the first application in 1959.

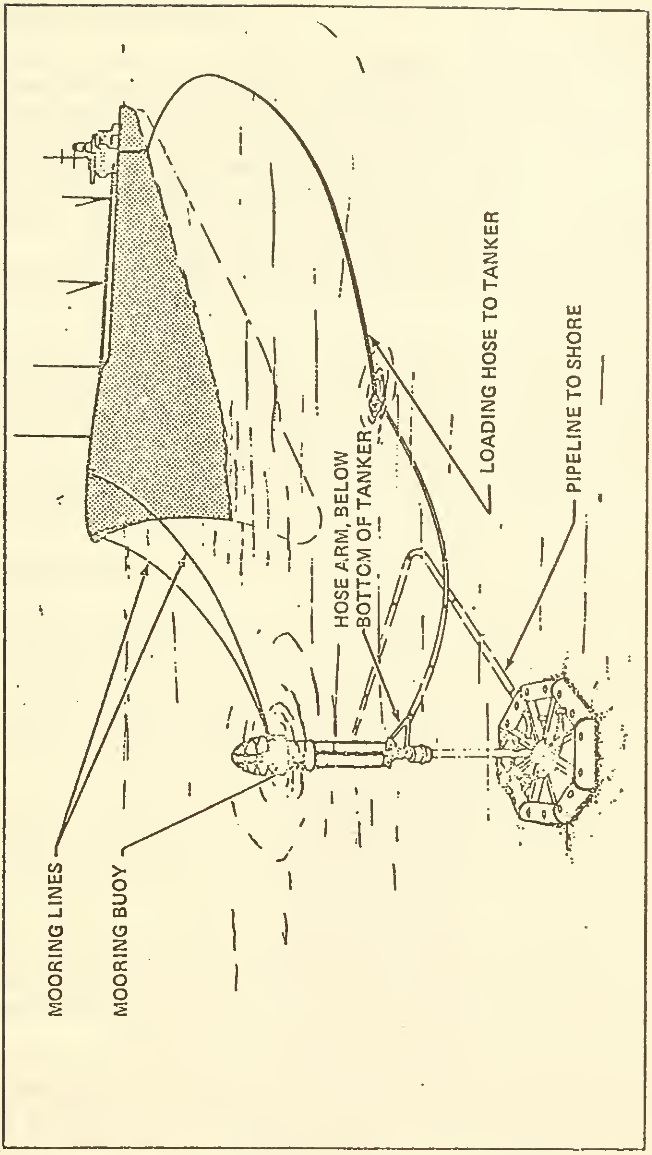
The single point mooring has the advantage of being operable in weather that would put other types of terminals out of service. The tanker is free to weathervane about the buoy, facing into the wind, current and waves to keep mooring line and other forces to a minimum. These buoys are sturdy and safe.

At the Seadock single point mooring buoy, VLCC's will be able to moor in up to 6 feet significant seas with a mooring craft handling the mooring lines and hoses. Once moored, the VLCC will be able to operate in significant seas of up to 12 feet while pumping oil ashore.

Historical data from the Institute of Storm Research shows that significant seas less than 12 feet will occur on the average of 96.6 percent of the time at the Seadock location. The buoys themselves would be designed to withstand hurricane conditions.

However, the tanker would have to stop pumping, close its valves and disconnect from the hoses and mooring lines under such conditions.

In the North Sea, one of the Seadock companies has demonstrated, as a result of 2 years of successful experience, the ability of


MOORING LINES
MOORING BUOY
HOSE ARM, BELOW BOTTOM OF TANKER
LOADING HOSE TO TANKER
PIPELINE TO SHORE

[Figure 1.]

self-moor in seas up to 16 feet and, once moored, to operate in seas up to 24 feet.

Although different operating equipment and conditions are involved, it is due to rapidly improving techniques such as this that the above Seadock operating criteria are considered conservative.

The operation of Seadock will benefit from the experience gained at some of the newer oil terminals around the world. The Milford Haven terminal, located in a national park in England, has operated with a spill rate of less than one-half barrel for every 1 million barrels handled according to a recent government report.

In a region of Ireland noted for its beaches, the Bantry Bay terminal has handled well over 500 million barrels of oil with no measurable pollution.

Single point moorings in Libya, Singapore and Okinawa, similar to those that Seadock will use, have operated with spill rates as low as Milford Haven and Bantry Bay. These operations will illustrate how proper design and adherence to good operating procedures have resulted in remarkably pollution free operations.

With new technology and expertise which have been developed over the years, we are certain these accomplishments can be equaled and exceeded by U.S. deepwater terminals.

Seadock plans to build the initial marine facilities at a location 25 to 30 miles offshore of Freeport, Tex.

This is essentially the same location recommended by the Corps of Engineers in its study. Seadock studied a number of offshore locations ranging all the way from Corpus Christi to Port Arthur.

The onshore and multiple offshore pipelines are the most costly portions of the seadock system. The Freeport location balances these costs to achieve a minimum investment. This location is in naturally deepwater and requires no dredging.

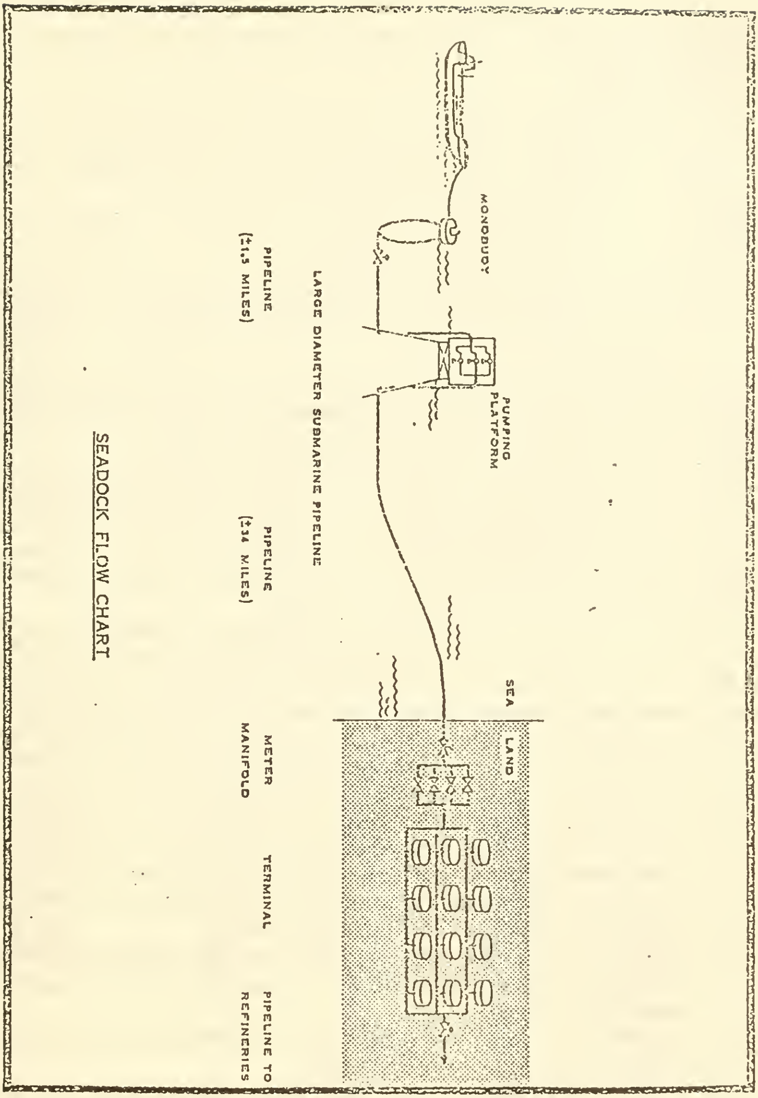
At least three SPM's are planned initially. Since a wide range of ship sizes are expected to call at Seadock, these buoys will be in 90 to 110 feet of water so as to be capable of handling ships in the 500,000 ton class.

One buoy will be fitted to accommodate the small number of 50,000 to 100,000 ton ships expected. These buoys will be connected to a pumping platform by buried pipelines capable of unloading rates of 125,000 barrels per hour or more. Buried pipelines will move the oil from the platform to an onshore tank farm.

The initial offshore facilities will be equipped with sufficient pumping capacity to move the crude the 35 to 40 miles to the Freeport onshore terminal. An offshore pumping and control platform, which is very similar to existing production platforms in the Gulf, will also house the living quarters for the offshore crews and will be equipped with a weather station and monitoring and communication facilities.

Additional platforms, buoys and lines to shore will be added as needed. The modular design of Seadock insures easy expansion so that future deeper draft ships can be accommodated.

Crude oil arriving at the Freeport terminal through the pipelines from the platform will be metered and diverted into large tanks. The terminal will provide segregated storage for the various crudes shipped.


SEADOCK FLOW CHART
MONOBUOY
PUMPING PLATFORM
LARGE DIAMETER SUBMARINE PIPELINE
PIPELINE (±1.5 MILES)
PIPELINE (±34 MILES)
SEA
LAND
METER MANIFOLD
TERMINAL
PIPELINE TO REFINERIES

[Figure 2]

The tanks will be 500,000 barrels or more in capacity and will be equipped with floating roofs to control hydrocarbon vapor emissions. The onshore terminal will also house the primary communications and control center.

From this terminal, the oil will be moved by existing and new pipeline systems to the refineries. Seadock is coordinating its studies with others engaged in development of the most efficient pipeline system for distribution to the refineries.

Systems such as Seadock require a tremendous investment. The segment of Seadock extending from the buoys to the onshore terminal is referred to as the marine portion.

Our current estimate fixes its cost at $310 million. The Freeport terminal is estimated to require an ultimate expenditure of $80 million.

Beyond Seadock, the distribution system to the refineries, including pipeline, pumping stations and breakout storage, will cost $155 million. That makes the total investment $545 million.

Seadock expenditures to date have already amounted to about $1 million for organizational and legal activities and preliminary engineering and environmental work.

As you can imagine, the construction of Seadock will require considerable time. The timetable we hope to follow would allow Seadock to be in operation by 1976.

However, the actual schedule will be greatly dependent on such factors as when Federal enabling legislation is provided, the time required for processing of the permit application, environmental impact statement preparation and review by Federal agencies, completion of necessary public hearings, cooperation of affected States and so forth. This project is currently being implemented by Seadock's Management Committee that functions much like a board of directors, a technical committee that sets and reviews standards, a legal committee that has responsibility for the necessary legal research and permitting activities, a public affairs and government relations committee that has responsibility for hearings such as this, and our full-time employees located in Houston.

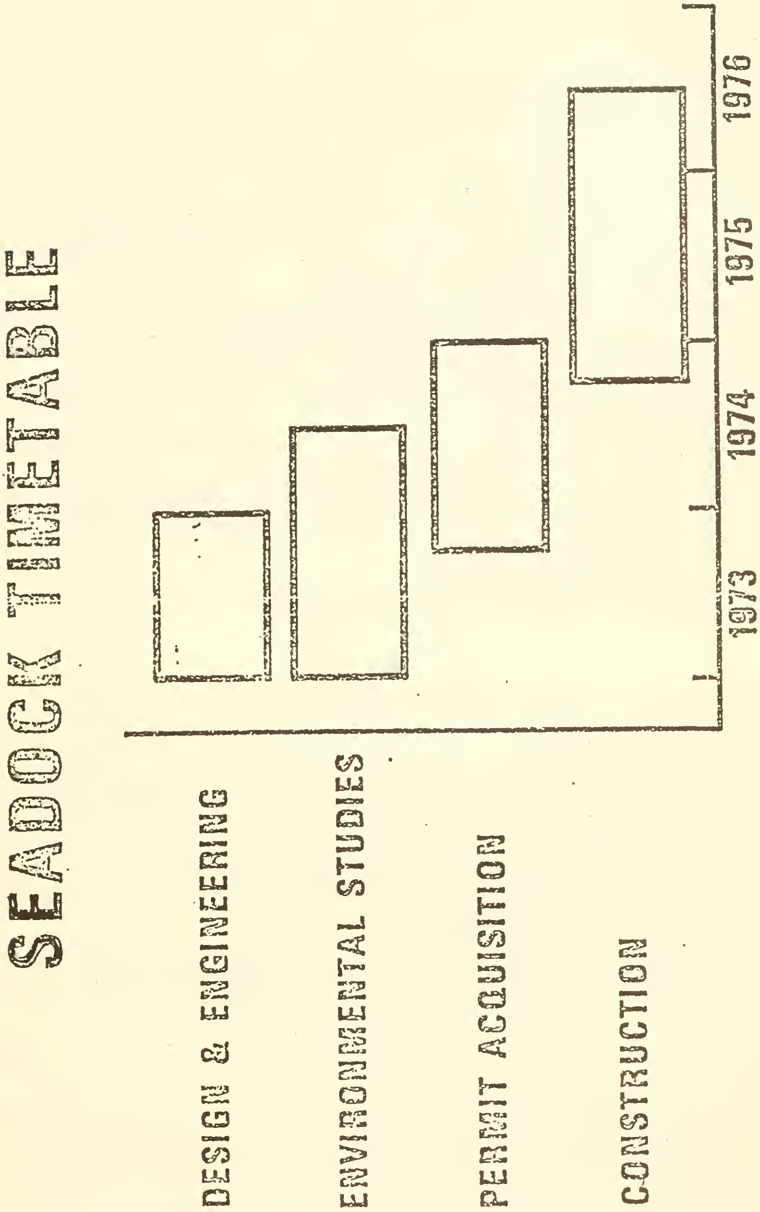
Seadock has been in close contact with various Texas State agencies and officials to advise them of our plans, to offer our assistance, and to receive their ideas.

They support the concept of deepwater terminals and are cooperating with Seadock in every possible way.

To promote establishment of a deepwater terminal off the Texas coast, the legislature, in 1972, established the Texas Offshore Terminal Commission. We think the commission can be a major asset to the State in meeting its goals and that it will be a critical link between Seadock and the Government.

Although existing Texas law and regulations appear adequate to cover the onshore terminal facilities and that portion of the pipelines within its territory, one of the commission's important tasks will be to insure that efforts directed at developing deepwater terminals are kept moving in the various State agencies that will be involved.

Seadock has completed a considerable amount of design and engineering work and is currently concentrating on finishing that work


SEADOCK TIMETABLE
DESIGN & ENGINEERING
ENVIRONMENTAL STUDIES
PERMIT ACQUISITION
CONSTRUCTION
1973
1974
1975
1976

[Figure 3]

as well as environmental studies that will be necessary in seeking a construction permit.

Our Houston based engineering staff is engaged in gathering data regarding volume forecasts, physical information and design criteria. They have finished a preliminary onshore soil analysis and are working on a similar study offshore. Conceptual design, sizing and optimization of all facilities is well underway.

Environmental studies have been started to gather data required for an environmental assessment. Dames and Moore, a leading environmental consultant, and Texas A. & M. University have been awarded a joint contract for this work.

Specialized segments of these studies will be handled by subcontracts, such as the measurement of air quality parameters being conducted by Southwest Research Institute.

Seadock estimates that the environmental studies will take until early 1974 to complete.

The final phase, actual construction of the Seadock facilities, can begin in 1974 if all permits have been obtained.

Construction activities, including preconstruction engineering and material acquisition, will take at least 18 months. Operation could commence in early to mid-1976.

This timetable demonstrates why we must move now if we are to have a deepwater terminal when it is needed.

ECONOMIC IMPACT

Now, let us turn our attention to the impact that deepwater terminals like Seadock will have on the United States. Let us look first at the economic impact.

While the future cost of petroleum products will undoubtedly rise in response to the law of supply and demand, these terminals will help minimize this cost by reducing the cost of transportation. This is important, not only to the individual in what he pays for gasoline and other products, but to U.S. industry that depends on minimum cost energy to remain competitive.

The recent trend in shipbuilding is aimed at reducing transportation costs. The 30,000-ton vessel is the average size ship that has called on gulf coast ports in the past few years.

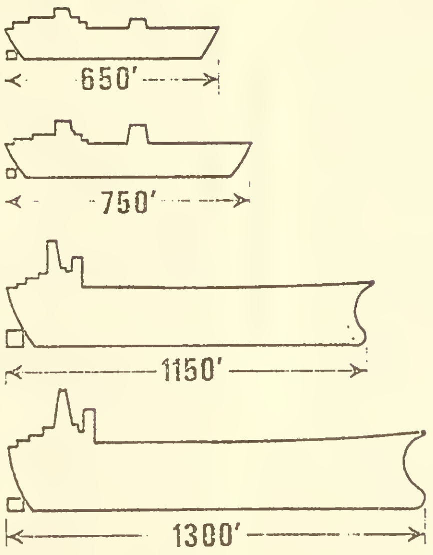
Let us consider the new building cost of moving a barrel of crude from the Persian Gulf to the gulf coast on a 30,000-ton ship during 1980 as equal to 100 percent.

The ship of today, the 250,000-ton vessel, could cut this cost to 45 percent of the 30,000-ton ship cost if it could be unloaded at a U.S. port, and the 500,000-ton ship of tomorrow could cut shipping cost to 38 percent.

The 50,000-tonner is the biggest ship that can get into most U.S. ports when fully laden, and no U.S. port is deep enough to allow entry of a fully laden 250,000-ton and larger ships.

A deepwater terminal, such as Seadock, has the flexibility to handle the deepest draft ships, whereas the cost of deepening and enlarging existing ports to handle comparable VLCC traffic could probably be prohibitive.

TRANSPORTATION COST – 1980
PERSIAN GULF TO U.S. GULF COAST



	SHIP	CARGO & DRAFT	RELATIVE COST/BBL.
1950	650′	30,000 DWT 35 FT.	100 %
1960	750′	50,000 DWT 38 FT.	88 %
1970	1150′	250,000 DWT 65 FT.	45 %
1975	1300′	500,000 DWT 95 FT.	38 %

[Figure 4.]

Seadock and other similar facilities will help provide an adequate supply of energy as the United States becomes increasingly dependent on imported crude oil. This will insure that existing industry is supplied with energy needed to continue operations.

All knowledgeable sources concur that there is no short-term viable or publicly acceptable U.S. energy supply alternatives to increased imports of petroleum. Because of current rising import levels and somewhat declining domestic production, deepwater terminals are needed to supply existing refinery capacity.

The actual land requirements for a deepwater terminal are minimal, including pipelines for delivering oil to refineries.

Downstream industrial developments that might follow construction of a deepwater terminal are already subject to State and local legislation and regulation. These downstream developments can thus be restricted in some areas but allowed to develop in other areas.

To the extent development is desirable, deepwater terminals do provide a means to attract new industry and assure continued economic growth for the United States. This growth opportunity exists not only for the coastal region, but also extends to many inland areas which will benefit from the large volume deepwater terminals feeding existing and new inland pipeline systems.

Such inland systems are more likely with deepwater terminal development which permits high throughput economical inland transportation.

ENVIRONMENTAL IMPACT

Now, let us look at the environmental impact of big ships and deepwater petroleum unloading terminals such as Seadock. The number of tanker arrivals required in the western Louisiana and upper Texas gulf coast ports to supply the 3-million barrels per day of Seadock throughput I just mentioned will increase dramatically if a deepwater terminal is not provided.

If 30,000-ton ships were used, by 1980, 13 port arrivals per day would be required. This drops to 1½ calls per day for a 250,000-ton VLCC.

In addition, with expected growth in refining capacity, oil products shipped from Texas ports will also increase, either with or without deepwater terminals. We estimate that the total load on Texas ports will double by the early 1980's without an offshore terminal.

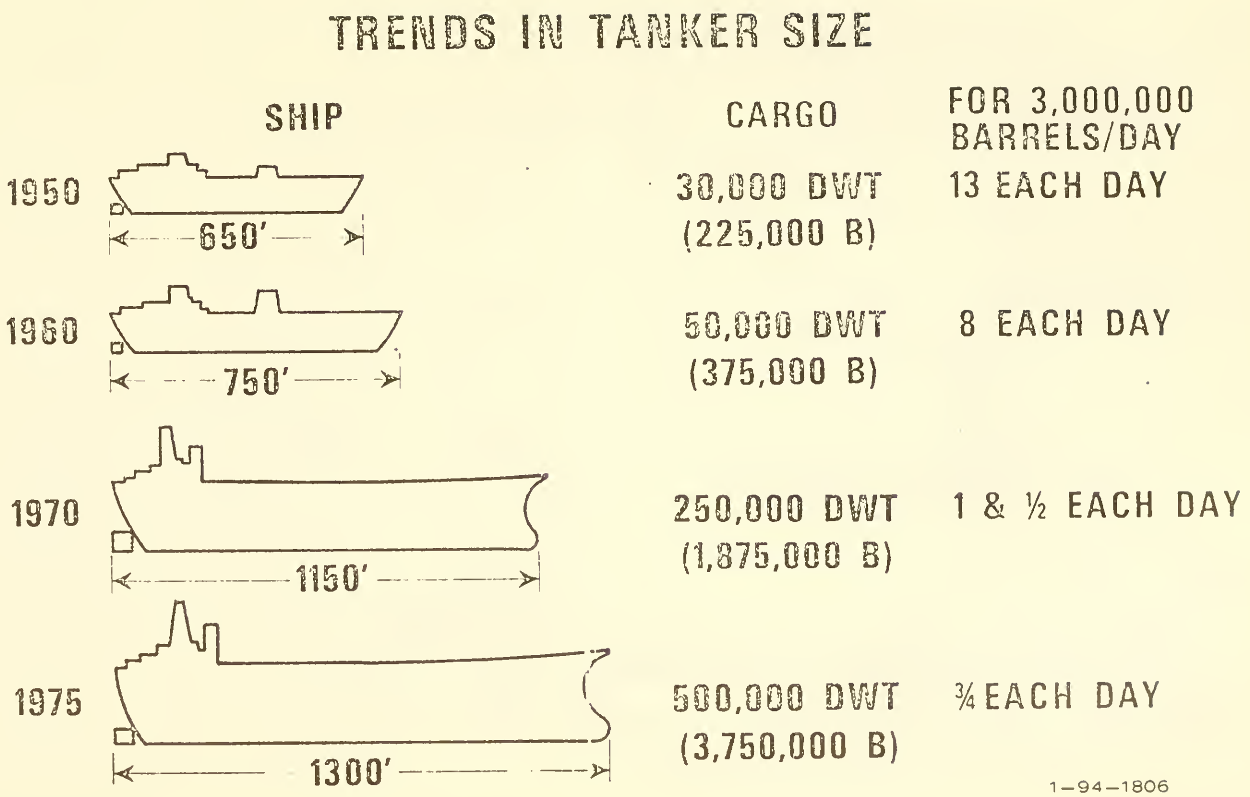
This illustrates the positive effect VLCC's will have in reducing port congestion.

Historical data analyzed by the U.S. Coast Guard on collisions and groundings dramatically demonstrate that most oil spill accidents occur where harbor congestion is great and where maneuvering of ships is restricted by narrow winding channels.

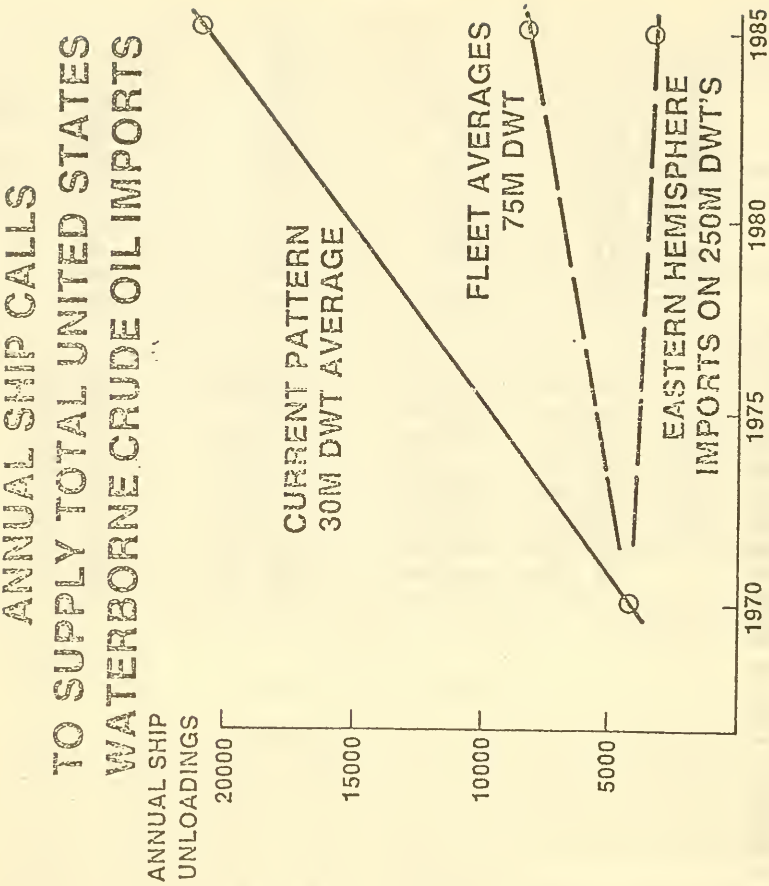
These accidents are quite rare on the open sea.

Clearly, Seadock's location far offshore will reduce this type of incident.

The President's Council on Environmental Quality, in its east coast study, concluded that deepwater terminals and VLCC's would cut spills to about one-tenth of what they would be if small ships were used in direct service or transshipment.

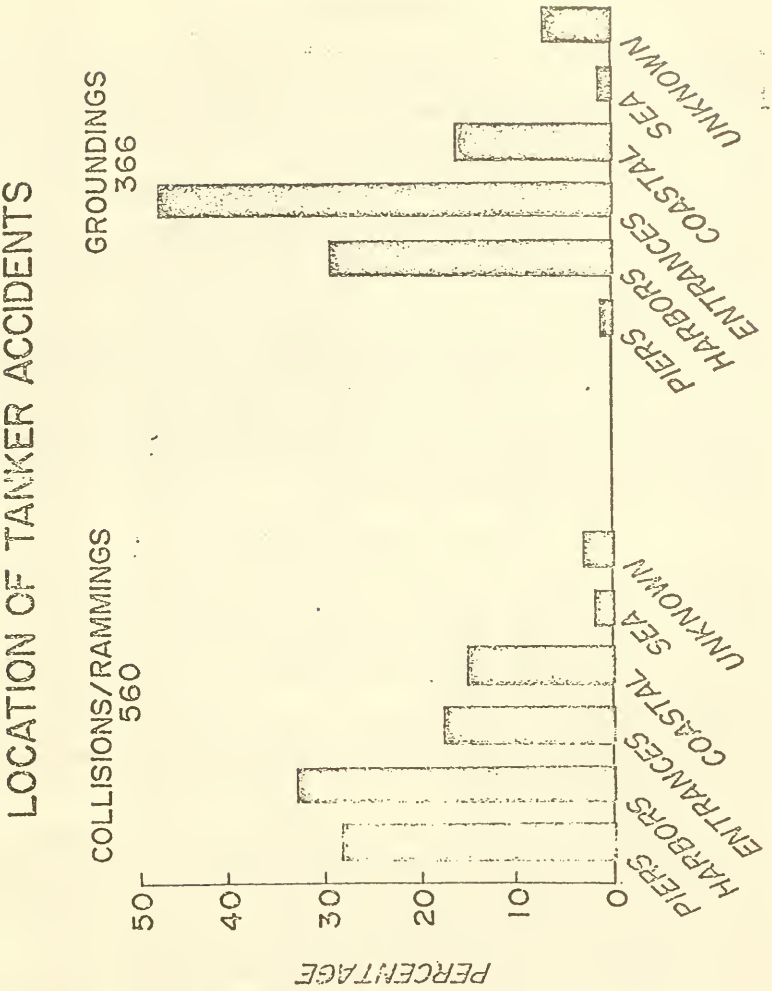

TRENDS IN TANKER SIZE
SHIP
CARGO
FOR 3,000,000 BARRELS/DAY
1950
650′
30,000 DWT (225,000 B)
13 EACH DAY
1960
750′
50,000 DWT (375,000 B)
8 EACH DAY
1970
1150′
250,000 DWT (1,875,000 B)
1 & ½ EACH DAY
1975
1300′
500,000 DWT (3,750,000 B)
¾ EACH DAY
1–94–1806

[Figure 5.]


ANNUAL SHIP CALLS
TO SUPPLY TOTAL UNITED STATES
WATERBORNE CRUDE OIL IMPORTS
ANNUAL SHIP
UNLOADINGS
20000
15000
10000
5000
1970
1975
1980
1985
CURRENT PATTERN
30M DWT AVERAGE
FLEET AVERAGES
75M DWT
EASTERN HEMISPHERE
IMPORTS ON 250M DWT'S

[Figure 6.]

FIGURE 7



[Figure 7.]

TANKER PROCEDURES

Extensive safety precautions and operating requirements will be established for the tankers utilizing the Seadock installation. First, the deepwater terminals themselves will permit the newest and most modern ships afloat to be used for movement of oil to the United States, the VLCC's of today and tomorrow.

The masters entrusted with the large captial investment tied up in the VLCC's will be highly trained and experienced.

Intergovernmental Maritime Consultative Organization—IMCO—regulations will apply to the facility as well as regulations of the U.S. Coast Guard.

The International Oil Tanker and Terminal Safety Guide will be utilized to govern operations at the facility. The procedures under which the ships are directed to the buoy, moored and operated will be subject to U.S. regulation, including traffic control, communications equipment, lighting, shutdown equipment, drip pans, et cetera. Vessels not meeting the equipment and performance requirements established will not be allowed to moor.

SAFETY DESIGN FEATURES

The Seadock facility will back up these tanker operating requirements with safety design features and precautions of its own.

First of all, Seadock will be an unloading terminal not subject to the two major problems of ballast disposal and overfilling of ships' tanks during loading operations.

Seadock will handle only petroleum. Operations will not be complicated by multipurpose equipment or procedures. The facility will be highly automated with a centralized control center and manual backup capability.

Computerized monitoring of operating systems, such as pressures, temperatures, flow rates, et cetera, will be utilized to indicate operating problems and facilitate rapid shutdown of pumping operations.

Automatic high-pressure shutdown systems will be installed for extra protection as well as surge and thermal relief systems.

Hoses will be visually inspected and pretested prior to unloading. Offshore pipelines will be buried a minimum of three feet in open areas and significantly deeper at shore approaches, fairway crossings and at SPM and platform areas.

Such pipelines have proven safe during years of extensive experience with similar installations.

An Army Corps of Engineers' report indicates that oil spills should be almost completely eliminated through the use of buried submarine pipelines.

Water treatment facilities will be installed at potential points of contamination, and facilities will include drip pans, curbing, drain systems, waste treatment and sumps. The onshore tanks will have floating roofs to control emissions, and there will be no excessive sound levels associated with Seadock.

DESIGN ASPECTS WHICH REDUCE POLLUTION RISK

- UNLOADING TERMINAL
  - NO BALLAST PROBLEMS
  - NO OVERFILLING OF TANKER
- PETROLEUM ONLY
  - NO DRY PRODUCTS
  - UNCOMPLICATED
- DRIP PANS
- ELECTRONIC MONITORING
- FACILITY INVISIBLE FROM SHORE
- PIPELINES FOR FINAL DELIVERY
- EMISSION CONTROL
- NO EXCESSIVE SOUND LEVELS

[Figure 8.]

CONTINGENCY PLANS

In the unlikely event of a spill, the oil must first be contained, then picked up. This is an area of new and rapidly improving technology.

A spill boom recently developed for use offshore of the west coast has been demonstrated to be effective in significant wave heights from 6 to 8 feet.

The U. S. Coast Guard is working on booms which might be displayed by helicopters. Skimmers to pick up the oil are currently operating satisfactorily in the Gulf. There are dozens of new booms and skimmers, and extensive research is continuing.

The American Petroleum Institute, the Environmental Protection Agency, and the U.S. Coast Guard have research programs totaling at least $10 million per year, and substantial expenditures are being made by individual oil companies.

I can assure you that Seadock will have the most appropriate equipment available.

For example, on the west coast today, and I believe in areas of the Gulf Coast Mr. Read referred to, I was speaking to the West Coast Clean Bay, Inc. has the capability of cleaning up a 100,000 barrel oil spill. This would be a major spill by any figment of the imagination. And they have facilities, booms, and skimmers that are capable of operating in seas of 6 to 8 feet.

Now, I mention that it is very rare that we get seas of over 8 feet in the Gulf Coast areas, so by applying the existing technology on the west coast to the Gulf Coast area, I feel that we have in hand a similar capability on the Gulf Coast. We are not stopping there.

We and various other industry, private, and governmental groups, are working together to greatly expand the oil spill pickup capability so that we can meet any contingency that we may be confronted with.

Acting as another line of backup to the manpower and equipment on site at Seadock would be the industry cooperatives formed to marshal the equipment and trained personnel of a particular geographic area in the event they are needed.

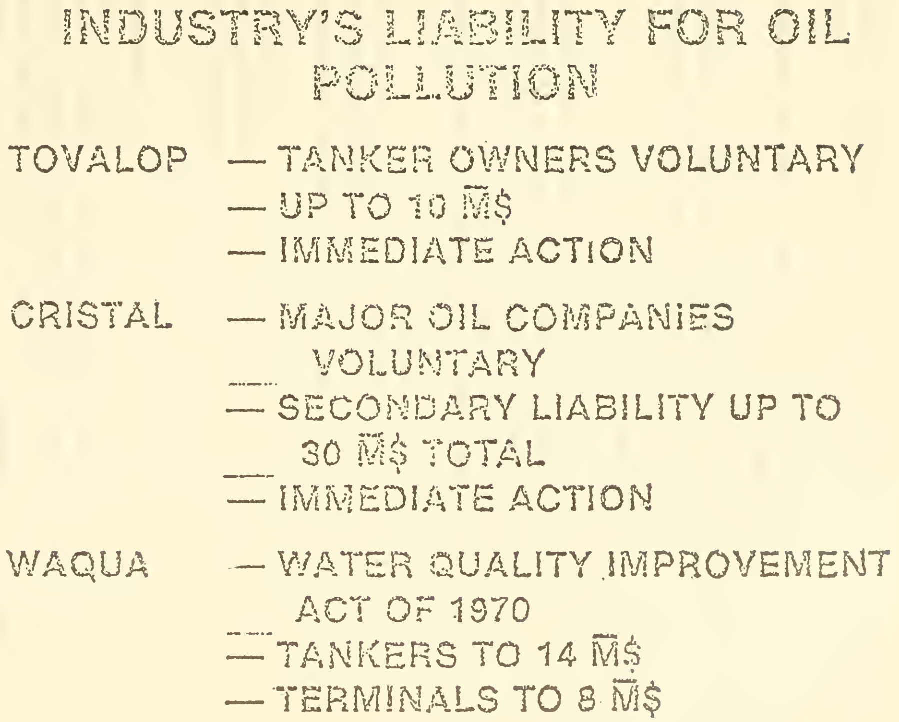
For example, the Clean Channel Association operates along the Houston ship channel and has at its disposal over 10,000 feet of spill booms, several floating skimmers, boats, vacuum trucks, and so forth.

In addition to the good intentions of tanker and terminal owners and operators, there are significant financial incentives for avoiding oil spills.

The first, and most obvious, of these is that every barrel of oil lost is a barrel of product that cannot be sold. In addition, industry assumes financial liability for cleanup of spills.

Two voluntary agreements insure coverage of oil pollution losses resulting from tanker operations. The first of these is known as Tovalop.

Tovalop covers most tankers over 95 percent—serving the United States and provides cleanup most based on tanker tonnage for up tc $10 million.



INDUSTRY'S LIABILITY FOR OIL POLLUTION

TOVALOP — TANKER OWNERS VOLUNTARY
— UP TO 10 M̄$
— IMMEDIATE ACTION

CRISTAL — MAJOR OIL COMPANIES VOLUNTARY
— SECONDARY LIABILITY UP TO 30 M̄$ TOTAL
— IMMEDIATE ACTION

WAQUA — WATER QUALITY IMPROVEMENT ACT OF 1970
— TANKERS TO 14 M̄$
— TERMINALS TO 8 M̄$

[Figure 9.]

The second agreement is Cristal. Participating companies have provided additional coverage up to $30 million for the correction of oil pollution.

An important feature of both agreements is that funds are available to start cleanup procedures immediately, before responsibility for the accident is assigned.

In addition, U.S. waters are subject to the provisions of the Water Quality Improvement Act of 1970, which assigns legal liability up to $14 million to the owner or operator of vessels, and up to $8 million for pollution from terminals.

This act also requires every terminal to have a contingency plan for handling spills.

This plan must be approved by the U.S. Coast Guard and would include provisions for handling even the largest, most improbable spill. Clearly, the participants of Seadock and similar facilities have strong incentives for reducing the potential for oil spills.

I might say that Seadock, and I am sure LOOP are also studying ways to which we might expand and improve our equipment and capability in this needed area.

I might comment Mr. Train commented to this committee, and he amplified it in Public Works, that one of the disadvantages of a monobuoy installation was the inability to surround the tanker with an apron as you could do at a fixed pier location.

Now, I would like to add on that, that he is correct in his statement. He went on and elaborated before the Public Works Committee, and pointed out that this may really not be necessary when we are talking about a facility 25 to 30 miles offshore where the currents are flowing offshore more parallel to the shore.

There, I think what is needed is having boom equipment at hand so you can get out there within 2 or 3 hours to contain a spill if it occurs, plus a capability of picking up the oil, because containing the oil is fine, but in the final analysis, we have to get the oil out of the sea. And it is in this area that we are emphasizing just as much as we are the containment area.

In closing, I would like to say I hope this discussion has given you a feel for the attention that is going into designing Seadock.

I have discussed how Seadock's ability to serve VLCC's will reduce the number of tankers required for imports and will keep the ships far offshore where accidents are less likely to occur.

We have seen that SPM technology is proven and that Seadock will not utilize novel untried concepts.

In addition, spill cleanup capability is continually improving with the design of new equipment, the formation of cooperative organizations, and the financial backing of insurance groups.

In short, we believe that deepwater terminals like Seadock will be beneficial to the U.S. environment.

FEDERAL LEGISLATION, NECESSITY, AND TYPE

Based upon legal studies which we have undertaken, we are of the opinion that the U.S. Government has jurisdiction to authorize and control deepwater terminal facilities on the Outer Continental Shelf.

However, our studies also indicate that there is a lack of any codified Federal law which specifically provides for the licensing and regulation of the construction and operation of offshore deepwater port facilities.

Although existing law would be applicable to a number of aspects of our proposed facility, the lack of any clear authority for making applications and the granting of permits creates considerable uncertainty as to the legal standards applicable to a project of the scope of the one Seadock is undertaking.

This being the case, we believe that Congress should exercise Federal jurisdiction in this area by the enactment of legislation authorizign a Federal agency to issue permits under comprehensive statutory and regulatory provisions specifically governing such offshore facilities.

There are several bills now pending in Congress which deal to some extent with aspects of deepwater port facilities.

However, H.R. 7501, which is being considered by the Interior Committee, is the type of comprehensive bill which would allow a Federal agency to license the construction and operation of a deepwater petroleum terminal.

In general, this bill provides for a Federal agency to assure that any application for a license to construct and operate a deepwater port facility will meet all the requirements of other Federal agencies which now have jurisdiction over any aspect of such construction and operation.

The bill also provides that adequate consideration will be given to the environmental impact such a facility might have as well as the need for such a facility from the standpoint of national interest requirements.

We can support the general approach to Federal legislation envisioned by H.R. 7501 as being comprehensive and designed to cover in one piece of legislation the authority of one Federal agency to issue a license for the construction and operation of a deepwater petroleum terminal while, at the same time, giving adequate safeguards and consideration to various effects the facility may have on the environment, the national interest, and the jurisdiction of the State and Federal Government.

The need for this type of legislation is pressing, both from the standpoint of national interest and environmental consideration. We urge Congress to enact this type of legislation as soon as possible.

I would like to thank you very much for your attention, and that concludes my oral presentation.

The Chairman. Well, thank you very much, Mr. Arnold.

Your statement is also very complete and very good, and I think has given us a great deal of information that we want to read in complete form and study.

I know that we have all been writing down some questions when you were both testifying. There is so much to ask.

We are going to proceed under the 5-minute rule here for questioning, but I want to start by asking a few questions.

First, would it necessarily mean that all oil delivered to these ports would be foreign imports?

Mr. READ. I think that the place where you would load supertankers would most likely be at a foreign port.

The CHAIRMAN. And then the other thing that came to mind in these various ports, those proposed to be built and those existing: Would the storage facilities be used just for oil, or would they be used for oil and dry products?

For instance, if they are just built offshore for the import of foreign oil, I can understand it, but you would not use the same facility for a dry cargo of grain, or something else, is that correct?

Mr. ARNOLD. You are correct. The installation would be for the handling of large imports of oil. It would greatly simplify the procedures for it to be this way.

On the handling of dry bulk cargo, we feel like it would be handled by expansion of the existing port facilities as the ships do not move the tonnage that oil moves, and do not require the draft, the depth of water, that is required for the large VLCC's.

The CHAIRMAN. I gathered that from what you said, but it was sort of glossed over.

Mr. ARNOLD. Yes.

The CHAIRMAN. Would you explain again the difference between the deepwater port that needs the protection of a breakwater system, and one that does not?

Mr. READ. With the single point mooring system, the tanker swings around the mooring according to minimize the forces of the waves and the wind, whereas at a fixed pier type installation the tanker would be moored against the fixed pier, and the mooring forces would be much stronger with winds from either side of the vessel (without a breakwater) than at a single point mooring.

The CHAIRMAN. As I understand your testimony, Mr. Read, present domestic crude oil production is something less than 13 million barrels per day, and can be expected to level off at about 13 million barrels during the next few years.

What is the present energy demand in equivalence of millions of barrels per day, and what is the present daily import of foreign crude oil?

Can you give us that now, or if not, will you supply it for the record?

Mr. ARNOLD. I think I can answer the question now.

The current total energy demand of the United States in terms of barrels per day of oil equivalent is in the neighborhood of 70 million barrels per day.

That does not look like right. Say that I am looking at the wrong side of the chart. I have some btu's on one side, and barrels on the other.

I am going to look on the right-hand side, and say that is about 40 million barrels per day of equivalent oil in terms of energy demand. That can be expected to grow to about 60 million barrels per day of the equivalent oil energy demand of 1985.

The current level of petroleum imports into this country is about 6 million barrels per day, and it is that figure that would grow to your 15 million barrels per day figure by 1985.

That gives you an idea of what the relative sizes of the imports total energy demand.

The CHAIRMAN. What is the present refinery capacity in the United States by regions in terms of millions of barrels per day?

Now, if you do not have that you can supply that for us when you look over your testimony.

Mr. ARNOLD. I could guess, but I think it would be better to have more accurate figures.

[The information follows:]

Existing refinery capacity

[*Thousands of barrels daily*]

PAD districts:	*Refinery capacity of Jan. 1, 1973*
1. (Atlantic coast)	1,603
2. (Midwest)	3,782
3. (Gulf coast)	5,590
4. (Rocky Mountain)	459
5. (West coast)	2,208
Total	13,642

NOTE.—Based on the information published by the U.S. Bureau of Mines, the refinery capacity in the United States at Jan. 1, 1973 was as follows by PAD district (refer to attached map for location of PAD districts).

The CHAIRMAN. A question for both of you.

If as you indicate our 1985 energy needs will reach the equivalent of some 60 million barrels of crude oil per day, what provisions and what time frame do you anticipate for the needed additional refinery capacity, not storage?

Mr. READ. I think we prefer to answer that one for the record.

The CHAIRMAN. Please do so.

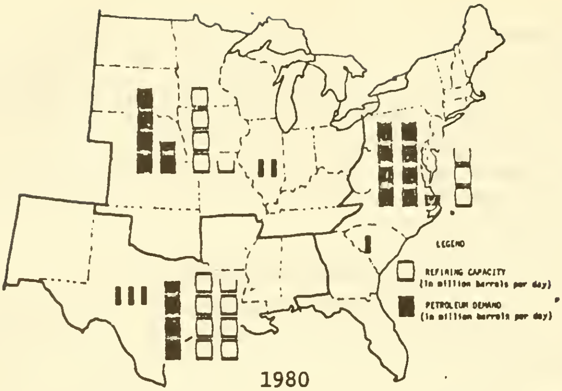
[The two items, table 6 and fig. IV, were supplied by Mr. William B. Read, while the two items entitled, "Projected Refinery Capacity" and the map "PAD Districts" were supplied by Mr. J. E. Arnold in responses to the request above:]

TABLE 6.—PROJECTED ANNUAL GROWTH IN REFINING CAPACITY FOR PAD DISTRICTS I, II, AND III

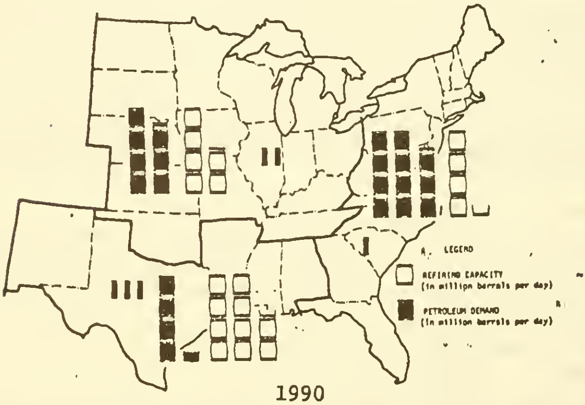
[In thousands of barrels per day]

PAD district	Refining capacity							
	1970	1971	1972	1975	1970	1985	1990	2000
III	4,825.8	5,227.2	5,462.7	5,777	7,652	9,088	10,383	13,162
(Louisiana)	(1,257.4)	(1,307.5)	(1,481.6)	(1,568)	(2,134)	(2,606)	(3,040)	(3,949)
II	3,226.5	3,492.7	3,470.1	3,902	4,658	5,348	6,021	7,633
I	1,473.2	1,501.4	1,528.5	1,740	2,850	4,000	4,520	5,709
	Annual percentage growth rates							
				1972–75	1976–80	1981–85	1986–90	1991–2000
III				1.9	5.8	3.5	2.7	2.4
(Louisiana)				(1.9)	(6.3)	(4.0)	(3.2)	(2.6)
II				4.0	3.6	2.8	2.4	2.4
I				4.4	10.4	7.0	2.4	2.4

Source: H. J. Kaiser Co. and Gulf South Research Institute.


I
II
III
LEGEND
REFINING CAPACITY (in million barrels per day)
PETROLEUM DEMAND (in million barrels per day)

1980


I
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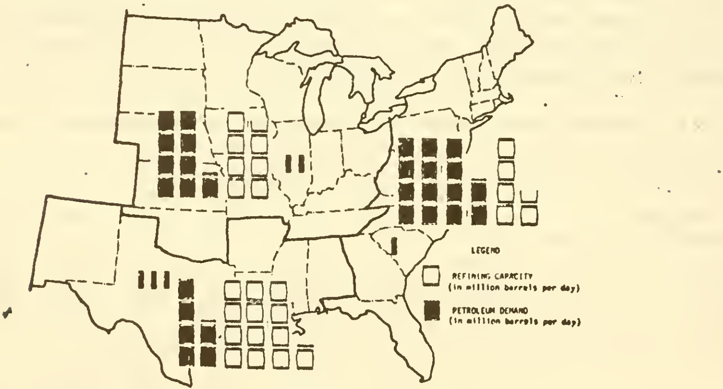
REFINING CAPACITY (in million barrels per day)
PETROLEUM DEMAND (in million barrels per day)

1990


I
II
III
LEGEND
REFINING CAPACITY (in million barrels per day)
PETROLEUM DEMAND (in million barrels per day)

2000

Fig. IV PROJECTED REFINING CAPACITY AND PETROLEUM DEMAND FOR PAD DISTRICTS I, II, AND III (1980, 1990, AND 2000)

PROJECTED REFINERY CAPACITY

[Thousands of barrels daily]

PAD districts:	1975	1980	1985
1. (Atlantic coast)	1,685	2,180	2,720
2. (Midwest)	4,070	4,900	5,700
3. (Gulf coast)	5,770	7,550	9,250
4. (Rocky Mountain)	490	600	650
5. (West coast)	2,280	3,050	3,590
	14,295	18,280	21,910

Note—Although the Bureau of Mines, Office of Oil and Gas, etc., published data does not provide projections of refining capacity, we are setting forth below industry projections which we consider to be representative of anticipated refinery capacity by PAD district. These projections, when totaled for the United States, are consistent with the initial case National Petroleum Council refinery projections for the United States in their recent "energy study." Please refer to the attached map for the location of PAD districts.

The CHAIRMAN. Would this entail the expansion of refineries in their present locations, or the sitting of new refinery locations, or a combination of the two, and if so, could you give us your ideas, and what proportion?

Mr. ARNOLD. The deepwater facilities we are talking about would primarily be utilized to serve existing refinery capacity, plus expansion of that existing capacity.

This would not rule out the possibility of new grassroots refineries being constructed in these areas, but it primarily would serve the requirement that exists today for existing refineries and for expansion of these refineries.

One of the advantages logistically to this type of facility is that it will allow oil to be moved inland to refineries that need crude oil, and which need to be expanded to supply demand in the other areas of the country, so I think that answers the question, and if not, I will be glad to amplify on it.

The CHAIRMAN. As you read over your transcript, do that, and if you have some statistics, I think it would be helpful to have it later on.

Mr. Read, since the LOOP plans include movement to Louisiana and the Mississippi locations, as well as to the upper Midwest, is there a fairly definite proportion planned for in these movements?

Mr. READ. The movements we would anticipate if a port were built, would be about half of the volume imported through the facility would move up through a pipeline into the Midwest area, and the other half would most likely be refined in existing Mississippi and Louisiana refineries, and expansions of those refineries, and possibly several new grassroots plants.

The CHAIRMAN. I noticed on one of your charts that the pipeline went up to Chicago, and then branched out.

Mr. READ. Yes, that is an existing pipeline system that is already functioning.

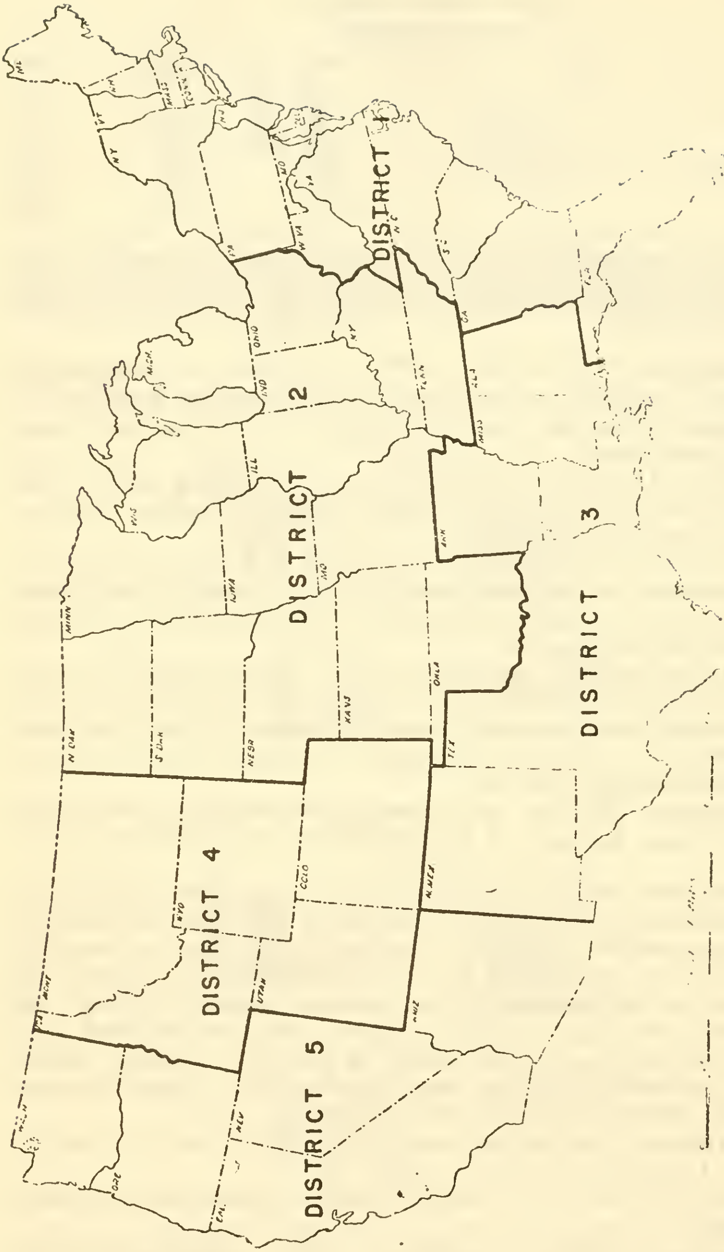
The CHAIRMAN. Did you mention, or did I read as you were speaking, of pipelines, 8 inches?

Mr. READ. No, this is a 40-inch pipeline.

The CHAIRMAN. Where did I get 8 inches?

Mr. ARNOLD. Eight-foot seas, probably.

Mr. READ. Eight inches is not a very big line, however there are some pipe lines of that size in service in offshore waters.



PAD DISTRICTS

The CHAIRMAN. No, I could not imagine that. If either of you could answer this now or later, what tonnage is included in LOOP plans for movement through the LOOP terminal facility by 1985, and on what rising scale will this throughput occur?

If you do not have that at the tips of your fingers, you can supply it.

Mr. READ. We have received nominations from the shareholding companies of what they would propose to ship through the facility, and these nominations start out somewhere between 1,700,000 barrels a day as soon as the facility would be available, and increasing to about 4 million barrels per day by 1985.

The CHAIRMAN. Fine.

Mr. Arnold?

Mr. ARNOLD. Our numbers are almost comparable. I mentioned, I think, 3 million by 1980, and 4 million by 1985 would be a close estimate.

The CHAIRMAN. Thank you.

Mr. Downing?

Mr. DOWNING. Thank you, Madam Chairman.

Gentlemen, I join the chairman in complimenting both of you for excellent statements.

Mr. Arnold, let me see if I have your figures straight. Did I understand you to say that the country requires 40 million barrels per day, and will increase to 60 million barrels per day?

Mr. ARNOLD. Oil equivalent energy. This is energy expressed in terms of barrels of oil per day equivalent.

Mr. DOWNING. Our own country produces 15 million barrels per day, and I thought I heard you say we import 6 million barrels per day.

Mr. ARNOLD. Yes, we import about 13 million barrels per day of oil, but we also produce gas and coal, so if you convert those to barrels per day of oil equivalent they also apply against the total demand.

Mr. DOWNING. My problem is who supplies the oil above that we import and produce ourselves?

If we produce 13 million barrels per day and import six million barrels, that is 19 million barrels, and we require 40 million.

Mr. ARNOLD. The other 21 million barrels to make the 40 million is made up in terms of other forms of energy, gas, coal, nuclear, hydro.

Mr. DOWNING. Mr. Read, what specific present statutes have any impact on the construction of offshore terminals, including the regulations of the connecting pipelines outside the territorial waters of the United States?

On page 2 you say we will complete the design work necessary for an application for an offshore terminal by the end of this summer.

To what agency do you make that application?

Mr. READ. That is one of our reasons for being here today, and one of the things that we mentioned at the end of our presentation.

We are doing what we think we will be required to do in the way of providing information for an application to whatever agency is designated that we can apply to.

Mr. Downing. Well, going back to the first part of my question, are there any present statutes that would affect you in your proposal?

Mr. Read. Yes; we would have to come within the regulations we believe of the Environmental Protection Agency, the Corps of Engineers, from the standpoint of navigational hazards, for pipelines on the Outer Continental Shelf, existing jurisdiction for pipelines is through the Bureau of Land Management, Department of Interior.

We will have to comply with numerous agencies, Mr. Downing.

Mr. Downing. Even though you are constructing this outside the territorial waters of the United States?

Mr. Read. Well, a part of our project will be within the territorial waters, and in this area we will be under the jurisdiction of existing Federal agencies, the Department of Transportation, and so forth.

Mr. Downing. Well, are you being held up pending this legislation?

Mr. Read. We are working right now trying to provide the data that we think will be necessary to make an application, but this particular time I think you can say we are being held up because we do not know what the requirements of the agency will ultimately be.

Mr. Downing. You are somewhat in the same position as the deepsea mining people are, awaiting the decision of the United Nations.

Mr. Arnold. I might comment about being held up. There are a lot of activities going on in the logistics of the country.

I mentioned the new inland pipeline systems that are going to be built.

Decisions on expansion of existing refineries and the logistics of the industry is closely related to the decisions on these new offshore terminals.

Where they are going to be located, and if they are going to be located, will affect these decisions, so it is important that we move forward in a timely fashion so we do not get delayed.

Mr. Read. We are all making plans in anticipation of some legislation that will enable us to proceed with our projects.

Mr. Downing. Back to you, Mr. Read.

You mention in your statement that at the present the cost of bringing oil in on the conventional ship is $13 a ton. With the supertanker it will reduce that to $5 a ton, approximately.

Eventually, will that saving be passed on to the consuming public?

Mr. Read. This is a cost of transportation, and the cost of transportation goes into the pricing of the product, and if the cost is reduced, then pricing quite possibly could be reduced, but it does not necessarily follow.

We would say that the potential cost increases would not necessarily need be passed on.

Mr. Arnold. There is no question that the ultimate cost to the consumer will be lower with deepwater terminals and lower transportation than with the alternative.

Mr. Read was concerned as to whether the level, today's level, we would be able to maintain or lower, or whether it would produce a higher energy cost that we are all faced with today, but there is no question that the reduction of transportation costs will result in a lower cost of energy to industry and consumers.

Mr. Downing. My 5 minutes are up but, Madam Chairman, just one further questions.

What provisions are there in your plans for the utilization of offshore terminals by companies who are not shareholders of the project?

Mr. Read. Both of our projects will be common carriers, and we will publish tariffs which will outline the needs for the shipper, and these will be equal for all shippers, whether they are shareholder or not a shareholder shipper.

We will accept the shipments from any person who can meet the requirements of the tariffs.

Mr. Downing. Thank you.

The Chairman. Mr. Lott?

Mr. Lott. Thank you, Madam Chairman.

I think I, too, would like to join in commending both of you gentlemen for your very fine statements. I think you have made two points very clear this morning, one that Mr. Downing was just asking you about, and you responded to that, that it was a definite need for some action to be taken legislatively so you gentlemen will know which direction to take from here on in.

Let me say here that the statements that you presented today are by far the best I have heard since these hearings started.

You have a lot of valuable information that I have been wondering about, and I think it proves once again the value of having private business involved in any venture of this nature as opposed to public efforts.

I have just two or three questions. One of them is why are we so late in this country in moving into this SPM configuration, or to the superports?

In looking at your charts around the world there are so many of them, and here we are now charging into the breech late.

Other than the fact that we have had enough domestic oil supply, what is your response to that?

Mr. Arnold. Your last statement answered the question. Japan and Europe have been in this position where they have had to import large volumes of oil for many years, so the facilities in the Middle East and Africa have had to load large volumes of oil.

We have not been in the position in this country with our domestic production of having to import large volumes of oil, so we have really not been an importer of crude oil though our history. We have been somewhat of an exporter.

Now, the worm has turned, and we will be in the same position of Japan and Europe in importing large volumes of oil, and we will have to have the facilities to handle it in an economic and environmentally safe way.

Mr. LOTT. I was wondering when you were talking about SPM being the best system, the safest, and so forth, what about damages that are caused by hurricanes?

You know, we have some pretty bad ones down in the Gulf of Mexico.

Would your SPM configuration be able to withstand winds of up to 150 miles an hour?

Mr. READ. We will take that into consideration in designing the facility, so that it will withstand hurricane forces.

The SPM, because of its design, is inherently more resistant to destruction by the hurricane forces.

Mr. ARNOLD. These are sturdy and safe installations. The Admiral from the Coast Guard commented on his experiences yesterday in the various parts of the world, and his answer was in the affirmative.

These will be designed, Mr. Lott, to withstand hurricane type forces.

Mr. READ. A facility owned by one of our shareholders installed in Okinawa has gone through several typhoons with no damage at all, and this is similar to what we expect in the gulf area.

Mr. LOTT. Other than not knowing exactly to whom you need apply, and getting the permit, which I think is obviously the major problem, what would you rate as your other major problem or problems, maybe with regard to pipeline, pipeline safety, any other particular point you are trying to make here this morning?

Mr. ARNOLD. I feel that a legislative program that would allow these proposals to come forward for consideration, and a timely decision to be made on them, that is the key to the matter.

Mr. READ. As we both pointed out, we are about half way through the actual design phase, or maybe more than that through the design phase of the project, and we have not come across any special problems that were not anticipated, and we feel very confident that we can go forward with the design as contemplated, and it will be very successful in its operation.

Mr. LOTT. Mr. Read, what is the distance out to your SPM?

Mr. READ. Our proposed facility would be approximately 21 miles offshore, and 110 to 120 feet of water.

Mr. LOTT. Being from Mississippi, I was particularly interested in your comments about the area that would be served, or the area you would draw from.

I guess that could be expanded almost without any limits, but it would be desirous to draw from refineries, the ones we have, and the ones planned in Mississippi, is that not right?

Mr. READ. The existing large refinery in Mississippi would be connected to our facility through an existing pipeline system that originates right at that point near our proposed tank farm.

Mr. LOTT. Once again, I would like to commend you for a very fine statement. You have shown a great deal of leadership and we appreciate your time in coming here.

That is all I have, Madam Chairman.

The Chairman. Mr. Stubblefield?

Mr. Stubblefield. No questions.

The Chairman. Mr. Jones?

Mr. Jones. Thank you, Madam Chairman.

I would like to commend you gentlemen for a very fine statement.

I am very sympathetic with your problem. When the gentleman from Virginia asked what agencies you might have to clear with in order to construct your offshore facility I am sure you cannot answer that, because there are farmers in my district who cannot dig a ditch on their own property without clearing through three Federal agencies and one State agency.

I hope you are not dreaming an impossible dream when you say the licensing procedure should be as simple as possible and result in an expeditious decision.

In any event, in all seriousness, I am very sympathetic, and can assure you of my extreme interest in assisting the other members of this committee and Congress in going forward with legislation to give you some assurance of what you can and cannot do in order that you might provide the relief that this nation needs, and our industry demands, which is so apparent.

Thank you, Madam Chairman.

The Chairman. Mr. Treen?

Mr. Treen. Thank you, Madam Chairman.

I want to add my commendation to Mr. Read whom I have known for some time, and you, Mr. Arnold, for your presentations. I think you have given us more data than we have had to date.

Let me ask you, Mr. Read, if you had a permit on January 1, 1974, assuming that for the purposes of this question, how long would it take to have the LOOP facility in operation?

Mr. Read. We anticipate that it would take between 18 months and 2 years to become operational.

The lead time required to get the equipment, the terminals, the pipe, and so forth, the long delivery items is approximately 18 months, from 12 to 18 months, and we would be placing orders immediately, and starting site preparation, and it would be approximately 18 months to 2 years.

Mr. Treen. Is it not true that you have gone ahead with a considerable investment already in the anticipation that you will gain a permit for the LOOP facility off the coast of Louisiana?

Mr. Read. Yes, sir, our budget is about $3.5 million for the environmental assessment, the engineering design and preparation for the permit application.

Mr. Treen. You have already invested $3.5 million?

Mr. Read. No, that is our budget through the permit and design phase. We will have spent that much money by the first of 1974 in the design and environmental assessment program for both the offshore port and the pipeline project.

Mr. Treen. As I understand the figures, assuming that you bring in 4 million barrels a day through the Louisiana facility, and 3 million barrels a day through the Texas facility, that 7 million barrels a day will be almost half of the total crude import needs by the year 1985, is that correct?

Mr. READ. Yes.

Mr. TREEN. Which you estimated at 15 million barrels per day.

Mr. READ. Yes, sir.

Mr. TREEN. So these two facilities alone would provide for about half of that needed import.

Mr. READ. Yes. I think Mr. Arnold said their facility in 1985 was estimated to handle 4 million barrels a day.

Mr. TREEN. It is 3½ million, and that would give you 7½ million, or one-half of the total crude import requirements for 1985.

Mr. ARNOLD. Yes, more than half of the refining capacity in the country will be supplied by these facilities, the existing refinery capacity.

Mr. TREEN. Mr. Read, you estimate that through the LOOP facilities about half of that crude would go up to mid-continent refineries, is that correct?

Mr. READ. Yes.

Mr. TREEN. The existing pipeline, does it have the capacity to move that much crude, or will another line have to be put down?

Mr. READ. Sir, the Capline ultimate capacity as it stands today is about 1,200,000 barrels per day, so that facility would have to be expanded.

Mr. TREEN. Would you anticipate it would simply be another pipeline utilizing the same right-of-way, at least for the major trunkline?

Mr. READ. That is being considered by the Capline owners.

Mr. TREEN. Just one final question.

Can you supply us with any estimate as to what the comparative cost of refined product would be if we did not permit these facilities, and instead facilities were built in the Caribbean so that the crude was brought into Caribbean ports and refined there, and then transshiped to the United States?

Do you have any idea what the increased cost of any finished product would be? As a guide, let us say, a gallon of gasoline for an automobile?

Would you care to make a ballpark guess?

Mr. READ. You want to make a guess, Jim?

Mr. ARNOLD. I think there are two aspects. You would have to assess the environmental cost of the small tankers and the oil spills, and you would have to assess the added cost of delivering the product.

Mr. TREEN. I am talking about the actual cost to the consumer when he pulls into the service station.

Mr. ARNOLD. We will be glad to study that for you. I think we could probably give you a more accurate picture by a submission for the record, if you would like it.

Mr. TREEN. Do you think it would be a substantial increase in cost?

Mr. READ. We have guessed that the additional cost to transship through a Bahamas port is somewhere between 10 and 15 cents per barrel, and it could be possibly more than that, depending upon what the additional charges that were assessed from those transshipment points.

Mr. **Arnold**. I think 10, 15, 20 cents is in the ballpark, and you multiply that by a lot of barrels to get a lot of dollars.

Mr. **Treen**. Thank you very much.

Thank you, Madam Chairman.

Mr. **Downing** [presiding]. Mr. Ginn?

Mr. **Ginn**. Thank you, Mr. Chairman.

Since I have the entire Georgia coast in my district, I want to commend you gentlemen for your statements. I think you are two of the finest witnesses I have heard since I have been in Congress.

Let me ask you this. Since most of our domestic supply of oil is in the area of your proposed projects, would it not also be wise for us to give a lot of consideration to locating some refineries, more refineries in the southeast with some deepwater facilities to accommodate the growing southeast?

Is much thought being given to that?

In other words, what I am trying to say is, in Georgia we want to get into the act.

Mr. **Arnold**. I have seen some proposals in your State, and I think it would encourage you to be active.

I think that we, as the country grows, and energy demand increases, that we not only need to expand our existing refineries, but we need to look for new grassroot refinery locations.

Mr. **Ginn**. How far inland can a refinery be and still be economically feasible in its operation?

Mr. **Arnold**. The logistics would depend if you were inland connected with a large diameter pipeline system like a Capline which supplies refineries in Illinois, Ohio, perhaps Michigan, or if you were where you had the economy of scale.

Now, if you were in a situation where you had to move inland through a small pipeline where you were wanting to build a single refinery for a single user you might not be able to get in, inland as economically as otherwise.

Mr. **Ginn**. The reason I ask that question is, of course, along the South Atlantic coast we are becoming more and more concerned about the protection of the resort areas and the islands we have. This is a matter of concern to us, but I still raise the question. I do not want to give the impression that I do not strongly support these two projects, because I do support them.

I am the cosponsor of the legislation, and will do all I can to help get it through, but if the refineries in Texas, Louisiana, and Mississippi are already taxed to their capacity with domestic oil, and there is a growing need in the southeast for the finished product, would it not be wise for us to get into the refinery business in the southeast, and move more of the imported oil in to be refined on the spot, so to speak?

Mr. **Arnold**. Let me say it this way. The existing refineries, as they sit right now, need imported oil.

Mr. **Ginn**. In other words, you are not operating at capacity?

Mr. **Arnold**. We are already importing 6 million barrels per day of petroleum. We are faced with a somewhat declining level of domestic production.

Let us take the existing refineries that we have. We need to have imported oil in order to maintain our existing refinery runs at their existing capacities.

Now, beyond that we are going to have to import additional levels of petroleum up to 15 million barrels per day. It will be for those additional imports, the expansion of existing refineries, as well as new refineries, and Georgia could be considered to take a part of that.

Mr. READ. Another point we might bring out is the timing factor. It usually is quicker to debottleneck or maybe make expansions to existing refineries to get the additional refining capacity, rather than starting from scratch and building a grassroots refinery. That takes a considerable amount of time, and takes an investment in the distribution system out of the refining area to the customers.

If you are tied into existing pipelines there are some advantages inherent in existing large diameter pipelines.

Mr. GINN. I understand that.

Thank you so very much.

Thank you, Mr. Chairman.

Mr. DOWNING. Mr. Steele?

Mr. STEELE. Thank you, Mr. Chairman.

Gentlemen, despite the reduction in the number of vessels actually carrying oil, you are going to have a corresponding increase of certain small service vessels, and I assume many other different kinds of vessels in the area.

I am wondering to what extent you have consulted with the Coast Guard about marine traffic control in the area, what provisions you have made for it, whether an existing system is going to be put in, or if there is a new system you are contemplating, and in general, the extent of the consultations, or the extent of the conversations with the Coast Guard on this whole subject.

Mr. READ. We have met locally with the Coast Guard representatives in New Orleans, with our proposed fairways and anchorage area, and the recommendations for buoys and navigational aids for our proposed facility, and they have been very cooperative and helpful.

Mr. STEELE. How about the actual system that may be adopted? Have you reached that point, or are you actually in the discussion stage?

Mr. READ. At this point we are in the discussion stage as to the location of the proposed fairway and the anchorage area. They had some recommendations that we are going back and are reviewing, and they have tentatively agreed with our proposal for marking the fairway.

Mr. STEELE. You do not see any problem in this respect?

Mr. READ. No, we expect cooperation with the Coast Guard.

Mr. ARNOLD. We are in a very uncongested area in the case of Seadock, and we see no problem in this area.

Mr. STEELE. Since we really have not gotten into this subject in great detail, I am wondering too what your legal rights and liabilities are operating outside the territorial waters of the United States?

For example, let us take a Liberian freighter that has run into someone else, or run into your equipment. Could you seize this ship? Could you call the Coast Guard? Has this all been worked out?

This is a fascinating area to give thought to. You are just 3 years away from going into operation, according to your timetable.

Mr. Arnold. First of all, let me say there are a couple of voluntary agreements that are presently active that will, in part, cover your concern.

One is Tovalop, and the other is Cristal.

Tovalop is agreement between tanker owners, and Cristal is an agreement between cargo owners and a combination of these two provide $30 million in the case of collision damages as the result of the type of accidents you describe, and the agreements are developed so that they are active.

You go out there and do the job first before you determine who is liable, and these type of agreements act to operate in that manner.

Now, in addition to that we have an existing act which places liability on both tanker owners and terminal operators up to either $10 million or $14 million. I will have to check and see which figure is accurate. It is based on the gross tonnage of the ship.

That would place a liability on the tanker or terminal operator, but Tovalop and Cristal go much further than that on dollar coverage.

Mr. Steele. Following up on some of the questions here, are you absolutely persuaded that the U.S. deepwater ports can be competitive versus a reasonably nearby foreign deepwater port in view of rate structures and simply the cost of the U.S. operation versus the foreign operation, or is this a problem you can possibly foresee developing 5 or 6 years down the pike?

Mr. Arnold. We can be competitive. The cost of moving the small ships, even 1,000 miles to the location in the Caribbean is going up and up because you have a 30-man crew on the T–2, and you have a 30-man crew on a large VLCC, so that I feel that the refinery capacity expansion will be provided in the United States, provided we have these types of facilities and the other provisions of the energy requirement, the administration's energy statement, and the Congress' energy program.

Mr. Steele. I think that it is important that we all appreciate exactly what we are getting into, and for that purpose, would you be prepared to provide for the record a breakdown of the competitive costs in view of the prevailing rate structures, et cetera, so that we can get a look at exactly what the difference will be?

Mr. Arnold. I think we can take a typical refinery in the Caribbean and compare it to a typical refinery in the United States with or without these types of facilities and give you the picture that I think you need.

Mr. Steele. I think that would be helpful, and I would like to ask that that be made available and placed into the record, Mr. Chairman.

Mr. Downing. Will the witness present that information to the committee?

Mr. ARNOLD. Yes.

Mr. DOWNING. Without objection it will be made a part of the record.

(The information referred to follows:)

U.S. REFINERIES VERSUS CARIBBEAN REFINERIES

U.S. refineries can be competitive with Caribbean refineries based on the security fees established by the President's energy policy pronouncement of April 18, 1973 and provided U.S. deepwater terminals are permitted to provide economical transportation of imported crude oil. To illustrate the relative cost of refining foreign offshore crude oil domestically compared to offshore locations in the Caribbean, we have utilized recent information development by the National Petroleum Council in their study. The crude oil price in the Persian Gulf, refinery operating cost, income taxes and return on refinery investment for both domestic and Caribbean refineries are the same as utilized in the NPC study. To these figures, we have added the crude oil and product transportation costs as well as applicable security fees for product and crude oil imports. The marine transportation costs are based on the newbuilding cost for 1976 delivery. The refinery costs in the NPC study are based on the average costs anticipated for a new 200,000 BPD refinery to 1985. Refinery locations on the East Coast, Gulf Coast and Caribbean are compared based on product movements to both the Gulf Coast and East Coast. A breakdown of the relative costs to deliver finished products to the East and Gulf Coasts from both new domestic and Caribbean refineries is shown below:

[Figures in dollars per barrel]

Refinery location	East Coast	Gulf Coast		Caribbean	
Product destination	East Coast	East coast	Gulf coast	East coast	Gulf coast
Crude oil price in P. G	$2.50	$2.50	$2.50	$2.50	$2.50
Processing loss	.15	.13	.13	.19	19
Refinery operating cost	.48	.45	.45	.38	.38
Interest on working capital	.08	.08	.08	.10	.10
Income taxes	.52	.45	.45		
10 percent return on refinery investment	.90	.79	.79	.90	.90
Subtotal	4.63	4.40	4.40	4.07	4.07
Crude oil transportation and terminaling cost	1.03	1.07	1.07	.91	.91
Product transportation cost		.32		.34	.35
Security fee—1st 5 years	.05	.05	.05	.60	.60
Total product cost	5.71	5.84	5.52	5.92	5.93
Added security fee beyond 5 years	.16	.16	.16		
Total product cost	5.87	6.00	5.68	5.92	5.93

The foregoing illustrates that new U.S. refineries can be competitive with Caribbean refineries even if the foreign refinery obtains a tax concession from the country in which it is located. A combination of economical crude oil transportation to U.S. deepwater ports in VLCC's and the security fees established on crude and product imports contribute to make the U.S. refineries competitive. To the extent that existing U.S. refineries can be expanded, the advantage of U.S. refinery additions will increase since expansions will generally be less costly than the costs for new grass root refineries reflected above.

The attached article provides information on the U.S. refinery expansions which have been announced since the April 18, 1973 energy policy announcement.

It should be noted that the price of crude oil in the Persian Gulf has increased considerably since the NPC figures were developed. Although this will increase the total product cost, it will not affect the relative comparisons between refinery locations.

Mr. STEELE. Thank you very much.

Mr. DOWNING. Mr. Studds?

Mr. STUDDS. Thank you, Mr. Chairman.

The questions that I have really follow some of the legal questions raised by Congressman Steele, and I think in all fairness I will save them for Justice and other agencies.

I am not sure the voluntary agreement among American companies would be of much comfort or interest to a Liberian tanker, or some of the other problems that might arise in international waters.

I have some real questions in mind about this kind of, in effect, interim unilateral action by the United States on the high seas pending an international agreement, but as I say, in fairness, I think those questions, unless you want to deal with that, should go to other people.

Mr. ARNOLD. I think matters of international law can best be handled by the other people, although I will comment that the agreements that I mentioned are not agreements just between U.S. companies. They are agreements between 95 percent of the tanker owners in the world, covered under Tovalop, but byond that I think you are correct in directing the questions to Justice.

Mr. STUDDS. Thank you.

Thank you, Mr. Chairman.

Mr. DOWNING. Counsel has some questions.

Mr. HEYWARD. I would like to ask in connection with these figures that you gave Mrs. Sullivan, earlier you talked about 6 million barrels per day and 15 million barrels per day in 1985 of oil imports.

Then Mr. Treen asked about the volume that you would handle in your two Gulf projects if they were approved.

Is 15 million barrels the total that you would foresee as handled by these offshore port terminals, that is, would you take over the 6 million barrels now being imported, or are you talking only about handling the increase which amounts to 9 million?

Mr. ARNOLD. It would handle some of both. I would say the great majority of the 15 million barrels per day would be handled by deepwater terminals, such as this, if we have a program.

There would be smaller volumes of oil due to one reason or another that would continue to be hauled in some of the smaller ships, but the great majority of the oil, both a portion of the 6 million barrels per day and especially a great majority of the 9 million, making a great majority of the 15 million would be handled through deepwater terminals such as this.

Mr. HEYWARD. Some of our present imports come in through pipeline from Canada, do they not?

Mr. ARNOLD. Yes, about 1 million barrels per day of oil is being imported from Canada.

Mr. HEYWARD. Do some of the Midwestern refineries use Canadian imports?

Mr. ARNOLD. Yes, they do.

Mr. HEYWARD. As the recent decision in Canada on exportation of oil, is that going to have any adverse impact on some of the oil presently coming in?

Mr. Arnold. It has been known for a few years that Canada needs a major oil field. Canada is producing pretty much for her own domestic requirement and for the United States.

Mr. Heyward. The point I am getting at is, it is not unlikely that some of the present pipeline movement from Canada might have to be replaced by increased imports from overseas.

Mr. Arnold. Yes, if Canada's oil cannot meet the refineries she is supplying.

Mr. Heyward. In connection with your consideration of alternatives, I assume you took a look at problems of dredging present ports.

What type of dredging costs did you use in your comparative analysis?

Mr. Read. Generally, dredging projects are State or Federal projects.

Mr. Heyward. I understand that.

Mr. Arnold. Rather than industry projects.

Mr. Heyward. But you must have looked at the comparative cost of expanding the present harbor as contrasted to building an offshore port. Or did you?

Mr. Read. The expansion of the Mississippi River depth I think would be a very expensive project, because they had a difficult time this spring in even maintaining the 37 foot depth that they try to maintain at the mouth of the river. At one time I think it was only 32 feet, and I think it would be a very difficult proposition to try to dredge the Mississippi.

Mr. Heyward. Maybe Seadock in Galveston, and some of the other projects have considered this.

Mr. Arnold. We feel the cost of dredging to an existing port facility to take the place of an offshore terminal would probably be prohibitive.

The environmental considerations of a dredging project where you are talking about going 40, 50, 60 miles of a dredged channel out into the Gulf would be tremendous. Dredging unit costs are difficult to quote in a generalized fashion, because are you talking about sand? Mostly they are quoted on the Rotterdam basis where you are talking about sand and silt.

When you get into Caliche and some other materials that will have to be moved, and how far you are going to move those materials from an environmental standpoint, and how wide a channel you are dredging, we feel that all of those costs added up will approximate somewhere over $1 a yard, and we understand the Corps was looking to something like $1.25 a cubic yard.

Mr. Heyward. I am not trying to suggest that it is a better alternative. I was merely trying to get a handle on what dredging costs you might have used in making a comparison.

Mr. Arnold. If we do not have to pursue it very far to come up with an answer, I would like to submit additional information.

Mr. Heyward. I would like to know whether or not you have an average figure for dredging costs, because we have different ones, depending on whom we talk to.

[The information follows:]

DREDGING COSTS

Consideration was given to the cost of dredging a long narrow channel in the Freeport area as an alternate to an SPM system. The dredged facility would also require a turning basin, jetty and fixed pier berths in order to unload VLCC's. For cost comparison purposes, an estimate was made for a 26 nautical mile long, 100' deep and 1000' wide channel. However, aside from the potential adverse environmental impact of construction, such a long narrow channel poses severe maneuvering, safety and pollution hazards and is not considered equal in safety, shiphandling or pollution control to the SPM system selected for Seadock. Currents and wind can easily ground a ship in a long narrow channel if it stops or loses way for any reason. The narrow 1000' channel would be limited to one-way traffic with VLCC's. This would reduce the flexibility and increase the time, congestion and cost in unloading VLCC's. The attached comparison between the Rotterdam channel (36½ N.M.) and a narrow 26 N.M. channel at Freeport or 39 N.M. channel at Galveston illustrates the relative narrowness of a 1000' channel. Even at Rotterdam, there is some concern about maneuvering VLCC's in the narrow (1300' to 2000') last 6½ mile section.

The cost of dredging will depend upon the equipment used, whether operating in the open sea or a protected harbor, material to be removed, distance spoil to be hauled, etc. Utilizing conventional U.S. dredging quipment and based on our offshore seismic studies and other data, our preliminary estimates indicate the following dredging costs for a Freeport channel broken down by the type of material to be removed:

	Percent	Per cubic yard
Sand and silt	37	$.70
Sand and clay mixture	38	1.25
Clay	25	1.80
Average		$1.18

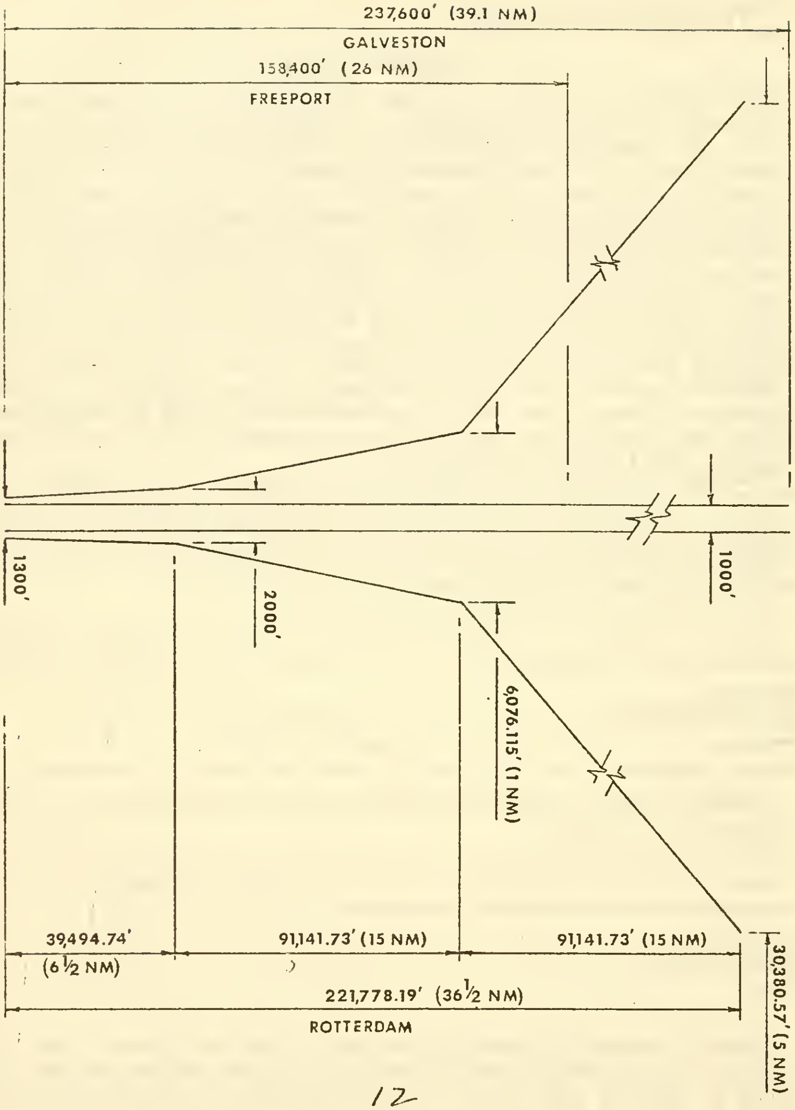
If foreign dredges were utilized, it is estimated that the above costs might be reduced to the following:

	Percent	Per cubic yard
Sand and silt	37	$.40
Sand and clay mixture	38	.70
Clay	25	1.00
Average		.66

Both of the above estimates reflect only a minimum distance haul of the spoil and environmental considerations could greatly increase the cost. Often, dredging costs are quoted on the basis of Rotterdam utilizing foreign equipment, moving only sand and silt, with ideal spoil disposal. Such costs cannot be applied to the Gulf, where a portion of the material is clay and disposal of the spoil could become a problem.

Utilizing the above unit dredging costs and including the cost of a turning basin, jetty and fixed pier berths in the Freeport area, we estimate a cost of $600 to $700 million using conventional U.S. dredging equipment. If foreign dredges were utilized, this cost might be reduced to about $450 million. As previously mentioned, environmental considerations could greatly increase these costs. These costs compare to the $310 million Seadock marine investment which includes the SPM's, connecting pipelines, platform, pumping equipment and buried pipelines to shore. In view of the longer distances, a dredged channel at Galveston would cost substantially more than the above Freeport estimates.

A relatively high maintenance cost to maintain the dredged channel facility would also need to be considered.



VLCC CHANNEL COMPARATIVE

Mr. HEYWARD. In connection with the problems of international law, I assume that it would not be feasible within your view to wait until an international agreement generally was reached on the Law of the Sea Conference before something was done on the permit.

Mr. READ. No, sir.

Mr. HEYWARD. I have some problem with how you are going to exercise control over foreign vessels that utilize these ports.

Do you foresee any difficulty in reaching bilateral agreements with the countries whose vessels might be using these facilities, and how many of these would you think would be involved?

Mr. ARNOLD. Well, I would not visualize a bilateral agreement.

We have these types of facilities operating throughout the world, and I mentioned some of the procedures.

There is a manual which I would be glad to obtain for this committee, that procedures have been well established for handling tankers at mono-buoys and other types of installations, and we feel like these procedures are in common enough practice whereby we can establish a safe operating procedure at our installation, and that we can refuse to moor a tanker who is not in conformance with that procedure.

Mr. HEYWARD. In other words, you would simply not allow them to moor if they did not agree to follow your procedures.

Mr. ARNOLD. Yes.

Now, Mr. Read may be able to comment on that, and he has been aware of some of the facilities that occurred over in Europe.

Mr. READ. We would prefer to handle this in an analysis that we will prepare on the aspects of international law.

Mr. HEYWARD. We have talked about extending our domestic law out to these platforms.

I question how far we can unilaterally extend our laws to foreign vessels on the high seas. If a casualty occurred, and the foreign vessel is willing to clean up its mess, assuming that it creates one, that is fine, but suppose it refuses?

Mr. READ. I think it is a very difficult question, and I think it is something that we would prefer to handle in a legal analysis that we would be happy to make for the committee.

Mr. HEYWARD. Perhaps the answer is to restrict the use of these offshore facilities to U.S.-flag vessels, and not permit foreign-flag vessels to moor, unless the flag nation agrees that its vessels are subject to the control of the United States while it is at that facility.

Mr. ARNOLD. I think the key is to emphasize the performance requirements and the procedures that are required, and once having done that, then on an international basis the design conditions of the tankers can better be handled by the associations, various design associations operating throughout the world.

Mr. HEYWARD. I agree with that. I am looking to the problems that occur that you do not expect to occur and that hopefully will not occur, but when they do occur we should have an answer for them.

Thank you, Mr. Chairman.

Mr. DOWNING. Mr. Rountree?

Mr. ROUNTREE. Let me address my questions to both of you.

If you have a short response, fine, if not, include it in your submission for the record.

First of all, what is the useful length of life of a deepwater port once it is built? Is it a standard 30-year depreciation level for investment purposes, or what?

Mr. READ. This is what we would anticipate using, the standard depreciation rates for the various components that go to make up the installation.

Mr. ROUNTREE. I would appreciate it if both of you gentlemen perhaps in concert with each other can submit to the committee an analysis of all applicable U.S. tax laws and their implications from the standpoint of yourself as a private operator operating on the high seas outside of U.S. jurisdiction?

Mr. DOWNING. Are the witnesses able to supply that information?

Mr. ROUNTREE. I hope you already have it.

Mr. READ. We will supply it.

Mr. DOWNING. It will be made part of the record.

[The information referred to follows:]

APPLICATION OF U.S. TAX LAWS TO PRIVATE DEEPWATER TERMINALS

We believe that deepwater terminals such as Seadock, as U.S. corporations, will be subject to all applicable U.S. tax laws and their income from operations outside the territorial limits of the U.S. will be taxable under the Internal Revenue Code. We consider that Seadock will be taxed as if its operations were entirely within U.S. territory since the jurisdiction of the U.S. will be extended to the deepwater terminal facilities.

CORPORATE STRUCTURE

Seadock is incorporated in the State of Texas, and upon capitalization will be fully qualified to do business in that state.

DOMESTIC OR FOREIGN CORPORATION

It is anticipated that Seadock will be a domestic corporation subject to all applicable laws of the United States and states within which it conducts operations.

ADMINISTRATION BILL, SECTION 103(C)—ECONOMIC CONSIDERATIONS

The language of Section 103(c) of the Administration's Bill would remove the economic effects from the licensing considerations. We strongly believe the development of petroleum deepwater terminal facilities will have a beneficial effect on the markets which they serve. It seems logical that the economic considerations involved in the development of such facilities should rest primarily with private industry since the economic risks involved in such development will be borne by private industry. Since the act will provide adequate environmental safeguards, we believe that private industry has expertise and ability to best determine the number and economics of deepwater terminals subject to each facility meeting the environmental conditions established. We therefore feel that the language of Section 103(c) is a necessary part of the act.

ICC REGULATION

We believe that regulation of a facility such as Seadock would fall under the jurisdiction of the Interstate Commerce Commission under Part I of the Interstate Commerce Commission Act as the facility as a whole will be essentially a petroleum pipeline system as opposed to strictly a port facility where cargoes are delivered to and received from vessels without further delivery or carriage by the operator of the port, such as the pipeline which will be an integral part of the Seadock unloading and transportation system.

About two-thirds of the Seadock investment will consist of pipelines, booster stations and tank farm facilities already regulated by the ICC. These facilities, along with the monobuoys and platform, will operate as a single transportation system. The Seadock onshore terminal will make deliveries to other pipeline transportation systems serving refineries on the Gulf Coast and Mid-Continent area which are regulated by the ICC. In addition, under the Outer Continental Shelf Lands Act (43 USCA 1331–1343) the ICC already regulates offshore oil pipelines from production platforms.

ANTITRUST IMPLICATIONS

The participants in the Seadock project are, of course, cognizant of the antitrust laws; and compliance therewith is a matter of concern to Seadock in the like manner as all other laws which might be applicable to the project. We believe the project planned by Seadock would not be violative of antitrust law, and we have asked for no immunity from antitrust law. The Seadock facility, as we envision it, will operate as a common carrier, available on equal, nondiscriminatory terms to all who need to use it, with tariffs and operating standards subject to Federal regulation. In addition, participation in Seadock is open; and we expect other companies to join. We are also trying to anticipate the needs of those companies who have chosen not to participate by designing extra capacity into the system and engineering the means for future expansion. We believe that precedent supports the existence of joint venture pipeline systems such as Seadock where such a system operates as a common carrier.

EXTENSION OF U.S. JURISDICTION TO FOREIGN FLAG VESSELS

Legal studies we have conducted indicate that the Administration Bill is probably supportable under International Law and that non-discriminatory conditions (such as consent to jurisdiction) can be imposed on access to the facilities owned by the U.S. or U.S. Nationals in International waters. In order to better establish the desire that foreign flag vessels and cargo owners using petroleum deepwater port facilities will be subject to U.S. jurisdiction, we have suggested the following language be included in the act per our recent Legal Memorandum:

"Foreign flag vessels or natural or juridicial persons who are not nationals of the United States using such facilities shall be deemed to consent to the jurisdiction of the United States for the purposes of this act, and the owner of each such vessel, and the owner of the cargo carried therein, before using such facilities, shall appoint an agent for service of process in the judicial district nearest the location of such deepwater port facility."

Mr. ROUNTREE. Then perhaps some information in relation to your individual corporate structures.

Do you qualify under U.S. law as a domestic corporation? If not, can you qualify as a foreign corporation which perhaps gets into my next question, and that is on page 5 of the administration's bill, subsection 103, section (c) which says, and I quote:

> The Secretary shall not limit the number of licenses or deny any licenses on grounds of alleged economic effects of deepwater port facilities on the commodity and the transportation markets served by them or other port facilities.

Now, I think I understand the rationale for this, but I am just wondering from the standpoint of the private terminal operators, do you feel that this language is a necessity in the bill?

Mr. READ. We will be prepared to submit to the committee our analysis of the administration's bill.

[See p. 420 for the response supplied to the above.]

Mr. ARNOLD. You found out that neither one of us are attorneys. We have done a lot of work through our legal committee in analyzing the various bills, and we will be happy to furnish you that, if you wish.

Mr. ROUNTREE. I think you understand the concept we are talking about. There are a number of antitrust implications which have really not been brought out on the record, and I would appreciate it if you would pay particular attention to that.

One more question, and that will be it, Mr. Chairman.

Why do both of your organizations feel that you would qualify, or must operate as a common carrier subject to ICC regulations, as opposed to a more traditional port concept, subject perhaps to another agency's rate structure, the Federal Maritime Commission, or what have you?

If you do not have a response for that, please supply that for the record.

I have some more, but I think working with Pete we can do it by letter.

Mr. DOWNING. Will you gentlemen supply that?

Mr. ARNOLD. Yes.

Mr. DOWNING. Well, gentlemen, we thank you very much.

The committee is going to recess at this time, and the Honorable Wallace H. Johnson, Assistant Attorney General, Land and Natural Resources Division, U.S. Department of Justice will be our first witness tomorrow morning, along with others.

The committee will stand adjourned, to meet tomorrow morning at 10 o'clock.

[The following was received for inclusion at this point in the record:]

SEADOCK,
Houston, Tex., July 26, 1973.

HON. LEONOR K. SULLIVAN,
Chairman, Merchant Marine and Fisheries Committee, House of Representatives, Washington, D.C.

DEAR MRS. SULLIVAN: In accordance with your request in the course of my June 26 testimony on deepwater tanker terminals on behalf of Project SEADOCK, I am enclosing a detailed analysis of the Administration legislation on this subject prepared by the SEADOCK Legal Committee. Additional information that you asked me to file will be ready very shortly.

Sincerely yours,

JAMES E. ARNOLD,
Chairman, Seadock Public Affairs Committee.

July 19, 1973.

MEMORANDUM

I. NATURE OF SEADOCK PROJECT

The Seadock Project has been organized for the purpose of constructing and operating a deepwater facility in the Texas Gulf Coast Area capable of unloading petroleum imports from the 200,000 to 500,000 deadweight ton class of Very Large Crude Carriers (VLCC). Since such vessels have a draft of between 60–100 feet and the Continental Shelf in the area slopes gently seaward, it is necessary to locate the mooring facility 25–30 miles offshore and unload vessels at that point and transport the petroleum to shore by pipeline.

II. NECESSITY FOR FEDERAL LEGISLATION

The mooring facilities, the pumping platforms and several miles of pipeline would be located in an area of the Outer Continental Shelf, over which no State of the Union has jurisdiction and over which the Federal Government has not extended its jurisdiction to structures located therein, except in the case of the Outer Continental Shelf Lands Act (43 U.S.C.A. 133–1343). Under that Act federal jurisdiction was extended only for matters relating to development of the natural resources thereof, and the Act is not broad enough to extend federal jurisdiction over structures and operations of the type contemplated by Seadock.

Under international law, the United States Government may extend its jurisdiction beyond its territorial seas for the purpose of authorizing and regulating the type of facilities contemplated by Seadock. Therefore, since the United States has such authority but has not exercised the same, it is proposed that the United States Congress enact legislation which would authorize the construction and operation of such facilities in the Outer Continental Shelf. Without such legislation Seadock and similar projects cannot safely proceed with construction and operation in an area that may be made subject to such federal jurisdiction.

III. GUIDELINES FOR PROPOSED LEGISLATION

The following proposals are made in a general manner, and are proposals which we believe should be incorporated in one comprehensive bill without the necessity of specifically amending any other act or law.

A. Single Purpose Act

It is possible, of course, that legislation authorizing the construction and operation of deepwater ports for the purpose of handling any type of cargo would be satisfactory for Seadock purposes. However, Seadock is interested in such facilities for the single purpose of unloading petroleum from VLCC's in the Outer Continental Shelf and moving such petroleum by pipeline from the unloading point to shore. The necessity for such single purpose facilities has been well established, whereas it is not probable that deepwater ports handling other commodities will prove to be required at any time in the near future. Therefore, in order to focus on the immediate necessity for deepwater facilities which will handle petroleum only, and without having to consider problems that may be involved in handling other types of cargoes, we propose that Congress consider legislation which will authorize the construction and operation of facilities in the Outer Continental Shelf only for the purpose of unloading petroleum and the movement of such petroleum from the unloading point to shore.

B. Extension of Federal Jurisdiction

By the Outer Continental Shelf Lands Act (OCSLA) the laws and jurisdiction of the United States were "extended to the subsoil and seabed of the outer Continental Shelf and to all artificial islands and fixed structures which may be erected thereon for the purpose of exploring for, developing, removing, and transporting resources therefrom, to the same extent as if the outer Continental Shelf were an area of exclusive Federal jurisdiction located within a State," and the United States district courts were given original jurisdiction of cases and controversies arising out of or in connection with such operations.

This manner of extending federal laws and jurisdiction to the Outer Continental Shelf for specific purposes is time-honored, and is one that recommends itself for extending jurisdiction over deepwater ports located therein. If this were done, all federal laws would automatically be extended to the deepwater port facilities without the necessity of listing the applicable laws.

C. Licensing of Construction and Operation of Deepwater Ports

With the extension of all federal laws and jurisdiction to deepwater ports in the Outer Continental Shelf, there will be a variety of federal agencies having jurisdiction over activities which may be related to or associated with the construction and operation of deepwater port facilities. However, no federal agency has the authority to license the construction and operation of the facilities themselves. Therefore, legislation should lodge in one federal agency the responsibility and authority for licensing such facilities. We would favor a statutory procedure whereby a single application filed with a single federal agency would constitute an application for all federal authorizations required for construction and operation of deepwater port facilities, with requirements to insure that all other affected federal agencies will be consulted by the lead agency so that such other federal agencies will pass upon those matters within their jurisdictions before the lead agency can issue a final license. In this connection it would be preferable to provide that the lead agency shall prepare a single detailed environmental impact statement in connection with each license and that such single statement would fulfill the requirements of the National Environmental Policy Act of 1969.

In order to provide for an orderly consideration of an application we would suggest a simple detailed procedure be incorporated in the legislation whereunder all interested parties may have the opportunity to comment or be heard on the application prior to the time that the lead agency grants or denies a license, with further provisions for immediate judicial review by any aggrieved party.

Since the number of locations for petroleum deepwater port facilities will probably not exceed eight, no elaborate rules and regultions for the licensing process should be required and the lead agency can protect the environment and the national interest by being authorized to establish appropriate conditions and restrictions in each license that may be issued for the construction and operation of each individual facility.

D. Jurisdiction of States

The federal legislation proposed relates only to the construction and operation of that portion of petroleum deepwater port facilities located outside the jurisdiction of a state. Under the Submerged Lands Act (43 U.S.C.A. 1301–1315) state jurisdiction over coastal lands and waters is recognized within three geographical miles from the coast (three marine leagues or approximately 10½ miles off the coasts of Florida and Texas), except the "United States retains all its navigational servitude and rights in and powers of regulation and control . . . for the constitutional purpose of commerce, navigation, national defense, and international affairs" which are paramount to state rights therein.

Although it could be argued that Congress may preempt the regulation and control petroleum deepwater port facilities located within the States' lands and waters, we do not propose that Congress do so. Rather we believe that there are areas within the police power of the states that should not be preempted by Congress and leave the states free to exercise their police powers absent a clear conflict with federal law and regulation.

In this manner there should be harmonious application of both state and federal laws and regulations since each jurisdiction would have special interests to consider.

IV. ANALYSIS OF S. 1751 AND H.R. 7501

(ADMINISTRATION BILL)

A. General

The legislation proposed by the Department of Interior, which has been introduced as the Deepwater Port Facilities Act of 1973 in both the Senate (S. 1751 introduced by Senators Jackson, Randolph, Cotton, Fannin, Johnson and Baker) and the House of Representatives (H.R. 2501 introduced by Representatives Saylor, Hailey, Hosmer, Camp, Treen and Udall) deals with the whole problem of federal authorization of deepwater port facilities and for that reason is superior in form and content to any of the other bills which have been introduced at the federal level.

We feel that the Administration Bill is a fairly comprehensive treatment of the Federal Government's authority over offshore terminals and generally, with our suggested amendments, meets the requirements for the enabling legislation which we believe is necessary in this area.

B. General Summary of Administration Bill

The Administration Bill establishes authority in the Secretary of Interior to grant licenses for the construction and operation of offshore port facilities beyond the 3-mile limit from the coastline by amendment of the Outer Continental Shelf Lands Act and enactment of additional provisions specifying the Secretary's authority over licensing. The amendment of the OCSLA provides the Department of Interior with authority to grant pipeline rights of way over Outer Continental Shelf for purposes other than movement of products extracted from the Outer Continental Shelf, and to provide for the accommodation of offshore terminals with exploration and production on the Outer Continental Shelf.

The Bill provides that an application to Interior will constitute an application to all federal agencies having jurisdiction over the offshore terminal with Interior to issue licenses only with concurrence of such agencies. Specific recognition is given to the requirements of the National Environmental Policy Act. The Bill would require the Secretary of Interior to ensure that facilities licensed will be consistent with state land use programs, while not giving states an express veto power over proposed facilities. The applicant for a license will be required to reimburse the Department of Interior for all costs occasioned by the application, licensing, construction and operation of the facility. A series of open forum hearings may be held at the discretion of the Secretary of Interior whenever substantial opposition to an application is received, with a separate evidentiary hearing on issues of fact raised by the application also being authorized.

C. Recommendations

Following are our recommendations for amendments or changes in the Administration Bill which would make the Administration Bill consistent with the Guidelines for Proposed Legislation mentioned above in Section III of this Memorandum.

Recommendation 1

In order to accommodate the Bill to cover deepwater port facilities which will handle only petroleum (as well as to encompass all legislation in one bill rather than amending the Outer Continental Shelf Lands Act as proposed in the Bill):

1. A. The title of the Bill should be changed to read as follows:

"To authorize the Secretary of Interior to grant licenses for the location, installation, use and operation of petroleum deepwater port facilities."

1. B. The term "Deepwater port facility" in Section 102(b) should be changed to "Petroleum depewater port facility" and the definition should be changed so that Section 102(b) would read as follows:

"(b) 'Petroleum deepwater port facility' means a facility constructed in the outer Continental Shelf for the principal purpose of providing for the transshipment of petroleum between vessels and the United States. It includes all associated equipment and structures in the outer Continental Shelf such as artificial islands, mooring buoys, pumping platforms, pipelines and connections thereto."

(Among other things, this change will obviate the necessity of the Secretary issuing pipeline rights of way. Since the Secretary is empowered to issue a license for such a facility the license would include a license to locate, construct, operate and maintain pipelines.)

1. C. A new subdivision (f) should be added to Section 102 to read as follows:

"(f) The term 'outer Continental Shelf' means all submerged lands lying seaward and outside the area of lands beneath navigable waters as defined in Section 1301 of Title 43 of the United States Code, and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control."

(This is the same definition used in the Outer Continental Shelf Lands Act and should be used here as designating the area to which the proposed Act applies rather than as "beyond three nautical miles from such coast" as proposed in 102(b) of the Administration Bill. By this amendment it will be certain that the Federal Government is not attempting to invade the province of the States of Florida and Texas whose jurisdiction extends three marine leagues, or approximately 10½ miles, whereas other states' jurisdiction extends only three miles seaward.)

1. D. Wherever the phrase "deepwater port facilities" appear in the Bill it should be changed to "petroleum deepwater port facilities".

1. E. A new subdivision (g) should be added to Section 102 to read as follows:

"(g) The term 'petroleum' means crude oil, and any products or byproducts of crude oil, or natural gas, or any combination thereof, which may be transported as a liquid."

1. F. The words "for transporting petroleum" should be added between the words "vessels" and "and" in line 17 on page 2 of the Bill.

Recommendation 2

The Administration Bill would amend the Outer Continental Shelf Lands Act (OCSLA) by providing in Section 5(a)(1) that the Secretary of Interior shall prescribe rules and regulations to accommodate the exploration and exploitation of the oil and gas and other mineral resources of the Outer Continental Shelf with the construction and operation of deepwater port facilities; and in Section 5(c) by eliminating the words "produced from said submerged lands in the vicinity of the pipeline", thereby allowing the Secretary of Interior to issue pipeline rights of way through the submerged lands of the Outer Continental Shelf for the transportation of oil or natural gas, whether or not such oil or gas pipelines are used for transportation of oil or gas produced from said submerged lands.

Under Section 5(c) of the OCSLA the granting of rights of way for oil and gas pipelines are subject to the express condition that oil or gas pipelines shall transport or purchase without discrimination in such proportionate amounts as the Federal Power Commission (FPC) in the case of gas, and the Interstate Commerce Commission (ICC) in the case of oil, may determine to be reasonable.

Under the Administration Bill, the administration of deepwater port facilities and its sea-to-shore pipelines will be split between two authorizing acts. Furthermore, the limited economic jurisdiction of the ICC under the OCSLA may not be sufficient to cover all the activities of deepwater port facilities. Therefore, it is our recommendation that the objectives of the amendments of the OCSLA be accomplished by weaving them into the Bill, thereby obviating the necessity of amending the OCSLA. This objective may be accomplished in the following manner:

2. A. Under Section 104(a) of the Bill, the "Secretary is authorized to issue reasonable rules and regulations governing application for and issuance of licenses and the construction and operation of deepwater port facilities under this Act." At the end of this section, there may be added the language otherwise used to amend Section 5(a)(1) of the OCSLA. Thus, the following language may be added at the end of Section 104(a) of the Bill:

"The Secretary may prescribe such rules and regulations as he deems necessary to accommodate the exploration and exploitation of the oil and gas and natural resources of the outer Continental Shelf with the construction and operation of petroleum deepwater port facilities licensed by him."

In our opinion, this would accomplish what was intended by the amendment of Section 5(a)(1) of the OCSLA.

2. B. It is our opinion that the ICC will have economic jurisdiction over the operation of the petroleum deepwater port facilities, and such facility would be a common carrier subject to all ICC rules and regulations under Part I of the ICC Act. However, this matter should be made certain by adding the following language as a subsection to Section III of the Bill:

"Every licensee of a petroleum deepwater port facility in the receipt, transportation by pipeline, and terminalling of petroleum shall be a common carrier of petroleum by pipeline under Part I of the Interstate Commerce Commission Act of February 4, 1887, as amended (49 U.S.C. §§ 1–27)."

Recommendation 3

It is recommended that Section 102(e) and Section 103(a) be amended by deleting in Section 102(e) the words "significant alterations", and substituting therefor the words "substantial physical addition"; and by deleting in Section 103(a) the word "significant" and inserting therefor the words "substantial physical". These changes are deemed necessary for the purpose of clarity, as the word "significant" is felt to be ambiguous and therefore a source of dispute and litigation. These changes will also make for greater consistency in the language of the two sections involved.

Recommendation 4

Section 103(b)(3) appears to authorize the Secretary of Interior to impose environmental requirements which might differ from those of the National Environmental Policy Act. Since NEPA's Environmental Impact Statement requires a full description of measures which can prevent and minimize adverse environmental impact, the same objects of Section 103(b)(3) can be accomplished by eliminating that section from the Bill and adding to Section 104(d) dealing with NEPA the following language: "The Secretary shall consider all significant aspects of the location, construction or operation of the facility, including any connecting pipeline and measures which can prevent or minimize adverse significant environmental effect, in relation to: .... (to be followed by language of Section 103(b)(3), A through F, as it now appears in the Bill."

In the alternative, if consolidation of the language of Section 103(b)(3) into Section 104(d) is not desirable, some limitations and guidelines on the scope of the Secretary of Interior's environmental requirements should be added to the first sentence of Section 103(b)(3) so that it would read as follows:

"(3) The facility will be located, constructed, or operated in a manner designed to minimize or prevent adverse significant environmental effects, taking into account the national interest and proven technology which is commercially available and economically reasonable."

Recommendation 5

Section 103(e) should be amended so as to make the decision of the Secretary of Interior one which is consistent with state land use policies but not necessarily subordinate to those policies. This approach seems more consistent with the intent of the Bill, which contemplates accommodation between various uses and the recognition of national interest. The amendment we suggest is as follows:

"(e) The Secretary shall consult with the governor of any State off whose coast the facility is proposed to be located in order to accommodate the operation of the facility and directly related land based facilities with the state land use program."

Recommendation 6

Section 103(g) of the Bill provides that "Licenses issued hereunder may be transferred after the Secretary determines that the transferee meets the requirements of this Act." In order to avoid any construction that a transferee may have to go through the total licensing procedure provided for in the Act, we suggest that the words "this Act" be deleted and in their place the following words substituted therefor: "subsection (b)(1) of this Section 102." Subsection (b)(1) provides a license may be issued to any citizen of the United States if the applicant is financially responsible and has demonstrated his ability and willingness to comply with applicable laws, regulations and license conditions.

Recommendation 7

Section 104(a) authorizes the Secretary to issue rules and regulations governing application for and issuance of licenses and the construction and operation of deepwater port facilities. It is not anticipated that a large number of projects will be constructed since the Act will be restricted to *petroleum* deepwater port facilities. Therefore, it is unnecessary for the Secretary to establish general regulations concerning construction and operation. Each petroleum deepwater port facility will be a thing unto itself and probably not subject to general rules and regulations on construction and operation. Therefore, we recommend deletion of Section 104(a) and leave to the Secretary under Section 107 the authority to attach conditions concerning the construction and operation of the facility, and leave to Section 105(a) the Secretary's authority to prescribe rules and regulations in relation to the application for and issuance of a license.

Recommendation 8

Section 104(b) is not clear in respect to reimbursement of potentially large sums of money which may fall on the applicant. Hence, the following amendment seems necessary:

"(b In carrying out all of his functions under this Act, the Secretary is authorized to consult with all interested or affected Federal agencies and to utilize on a reimbursable basis from monies appropriated to the Department of Interior the full resources of the Federal Government in ocean engineering and undersea technology."

Recommendation 9

Section 104(c) may be read to limit the application only to those facilities located beyond the three-mile limit, thereby requiring separate and additional federal applications to agencies such as the Corps of Engineers for pipelines and structures within navigable waters, and to EPA for onshore facilities. This result is probably unintentional in view of the Act's stated purpose of providing a "mechanism whereby all federal permits necessary for all construction of the deepwater port facility will be handled through a single application filed with the Interior Department". Nevertheless, an amendment to that effect seems mandatory. Moreover, it is desirable to point out that the process should not be unduly delayed. To accomplish these ends Section 104(c) should be changed to read as follows:

"(c) An application filed with the Secretary for a license under this Act shall constitute an application for all federal authorizations required for construction and operation of a petroleum deepwater port facility and all related facilities whether located in waters, seabed, or onshore. The Secretary upon receipt shall forward a copy of the application to those federal agencies having jurisdiction over any of the construction and operation of the petroleum deepwater port facility and all related facilities whether located in waters, seabed, or onshore. The agencies shall as expeditiously as possible notify the Secretary whether or not the application meets the requirements of the laws which they administer. If any such agency is of the opinion that the application does not meet such requirements, it shall advise the Secretary of what is necessary to meet such requirements. The Secretary shall forthwith convey such requirements to the applicant who may amend his application or seek such other remedies that may be available to him under law. Hearings held pursuant to this Act shall be consolidated insofar as practical with hearings held by other agencies in order to avoid undue delay in the consideration of applications for licenses."

Recommendation 10

Section 105(a) *requires* the Secretary to prescribe by regulation the procedures, including appropriate charges, for the submission and consideration of applications for licenses. It is unnecessary to make this matter mandatory and the word "shall" in line 10 on page 8 of the Bill should be changed to the word "may". The second sentence of Section 105(a) should be stricken since under the first sentence thereof the Secretary could include requirements that the application contain the necessary financial, technical and other information. In order to show that the issuance of such rules are not mandatory the following language should be added as a second sentence to Section 105(a):

"Applications may be made and licenses issued without the necessity of the Secretary issuing regulations permitted hereunder."

Recommendation 11

We recommend language be added as a subsection to Section 105 to protect trade secrets in the following manner:

"(a) Copies of any communications, documents, reports, or information received or sent by an applicant shall be made available to the public upon identifiable request, and at reasonable cost, unless such information may not be publicly released under the terms of subsection (b) of this section.

"(b) The Secretary shall not disclose information obtained by him under this Act which concerns or relates to a trade secret referred to in Section 1905 of Title 18, United States Code, except that such information may be disclosed—

> "(1) to other Federal Government departments, agencies, and officials for official use upon request;
>
> "(2) to committees of Congress having jurisdiction over the subject matter to which the information relates;
>
> "(3) in any judicial proceeding under a court order formulated to preserve the confidentiality of such information without impairing the proceedings;
>
> "(4) to the public in order to protect their health and safety after notice and opportunity for comment in writing or for discussion in closed session within fifteen days by the party to which the information pertains (if the delay resulting from such notice and opportunity for comment would not be detrimental to the public health and safety).

Nothing contained in this section shall be deemed to require the release of any information described by subsection (b) of section 552, title 5, United States Code, or which is otherwise protected by law from disclosure to the public."

Recommendation 12

Section 107(1) may impose a heavy financial burden, especially as a condition to obtaining a license. Furthermore, the conditions are not subject to any limitation, and are thus open-ended, and may be applied unevenly to applicants. A better approach will be to place authority in the Secretary to promulgate rules and regulations with respect to reimbursement which will be uniformly applied to all applicants. This could be achieved by the following language: "The Secretary may prescribe by regulation reasonable reimbursement by the licensee of the costs occasioned by the licensing", which could be added to either Section 104(a) or Section 105(a) and Section 107(1) eliminated.

Recommendation 13

Since under our Recommendation 2. B. the ICC will have economic jurisdiction over the operation of a petroleum deepwater port facility Section 107(5) is unnecessary and should be eliminated.

Recommendation 14

In Section 109, it is recommended that the word "shall" be changed to "may" so as to make the additional punishment permissible but not mandatory, in view of the fact that punishments imposable under existing laws other than the Administration Bill should in themselves serve as considerable deterrence to violations by the licensee.

Recommendation 15

Section 110 should be amended to expressly provide that any determination on revocation or suspension of licenses be subject to 5 U.S.C. § 706 to ensure judicial review of the reasonableness of the Secretary's decision to suspend or revoke licenses. It is also suggested that actions by the Department of Interior be taken to the U.S. District Court nearest the facility as the same would logically be the most convenient forum to hear such matters. The section as amended would read:

"(a) Whenever a licensee fails to comply with any provision of this Act, or any rule, regulation, restriction or condition made or imposed by the Secretary under the authority of this Act or fails to pay any penalty assessed under Sections 108 or 109 (except where a proceeding for judicial review of such assessment is pending) the Secretary may, subject to the provisions of 5 U.S.C. § 706, file an action in the United States District Court nearest the facility to either (1) suspend operations under the license, or (2) if such failure is knowing and continues for a period of thirty days after the Secretary mails notice of such failure by registered letter to the licensee at his record post office address, revoke such license; *provided..*."

Recommendation 16

All of Section 111 is a cumbersome and untried method of extending federal jurisdiction to the Outer Continental Shelf. As indicated in our Guidelines for Proposed Legislation, in Section III of this Memorandum, the time-honored method used in the OSCLA in extending federal jurisdiction to the Outer Continental Shelf for resource development should be used in extending federal jurisdiction for petroleum deepwater port facilities.

To accomplish this the language of 43 U.S.C.A. § 1333, revised to apply to petroleum deepwater port facilities, should be used in lieu of the present Section 111 of the Administration Bill. This language, so revised, reads as follows:

"Section 111. (a) (1) The Constitution and laws and civil and political jurisdiction of the United States are extended to the subsoil and seabed of the outer Continental Shelf and to petroleum deepwater port facilities which may be erected thereon, and to the waters related thereto, to the same extent as if the outer Continental Shelf were an area of exclusive federal jurisdiction located within a state or located in navigable waters or in the U.S. contiguous zone: *Provided, however*, That petroleum deepwater port facilities on the outer Continental Shelf may be constructed and operated only under the provisions of this Act.

"(2) To the extent that they are applicable and not inconsistent with this Act or with other federal laws and regulations now in effect or hereafter adopted, the civil and criminal laws of each adjacent state as of the date this Act becomes final are declared to be the law of the United States for that portion of the subsoil and seabed deepwater port facilities erected thereon, which would be within the area of the state if its boundaries were extended seaward to the outer margin of the outer Continental Shelf, as the President has or shall determine. All of such applicable laws shall be administered and enforced by the appropriate officers and courts of the United States. State taxation laws shall not apply to the outer Continental Shelf.

"(3) The provisions of this section for adoption of state law as the law of the United States shall never be interpreted as a basis for claiming any interest in or jurisdiction on behalf of any state for any purpose over the seabed and subsoil of the outer Continental Shelf, or the property and natural resources thereof or the revenues therefrom.

"Jurisdiction of United States district courts

"(b)(1) The United States district courts shall have original jurisdiction of cases and controversies arising out of or in connection with any operations conducted on the outer Continental Shelf relating to operation and use of petroleum deepwater port facilities, and proceedings with respect to any such case or controversy may be instituted in the judicial district in which any defendant resides or may be found, or in the judicial district of the adjacent state nearest the place where the cause of action arose.

"(2) Foreign flag vessels or natural or juridical persons who are not nationals of the United States using facilities shall be deemed to consent to the jurisdiction of the United States for the purposes of this Act and the owner of each such vessel, and the owner of the cargo carried therein, before using such facilities shall appoint an agent for service of process in the judicial district nearest the location of such deepwater port facility.

"*Applicability of Longshoremen's and Harbor Workers' Compensation Act; definitions*

"(c) With respect to disability or death of an employee resulting from any injury occurring as the result of operations relating to petroleum deepwater port facilities, compensation shall be payable under the provisions of the Longshoremen's and Harbor Workers' Compensation Act. For the purposes of the extension of the provisions of the Longshoremen's and Harbor Workers' Compensation Act under this section—

"(1) the term 'employee' does not include a master or member of a crew of any vessel, or an officer or employee of the United States or any agency thereof or of any political subdivision thereof;

"(2) the term 'employer' means an employer any of whose employees are employed in such operations; and

"(3) the term 'United States' when used in a geographical sense includes the outer Continental Shelf and artificial islands and fixed structures thereon.

"*Applicability of National Labor Relations Act*

"(d) For the purpose of the National Labor Relations Act, as amended, any unfair labor practice, as defined in such Act, occurring upon any petroleum deepwater port facility shall be deemed to have occurred within the judicial district of the adjacent state nearest the place of location of such island or structure.

"*Coast Guard regulations; marking of islands and structures; offenses and penalties*

"(e) (1) The head of the Department in which the Coast Guard is operating shall have authority to promulgate and enforce such reasonable regulations with respect to lights and other warning devices, saftey equipment, and other matters relating to the promotion of safety of life and property on the petroleum deepwater port facility or on the waters adjacent thereto, as he may deem necessary.

"(2) The head of the Department in which the Coast Guard is operating may mark for the protection of navigation any portion of such petroleum deepwater port facilities whenever the owner has failed suitably to mark the same in accordance with regulations issued hereunder, and the owner shall pay the cost thereof.

"*Prevention of obstruction to navigation by Secretary of the Army*

"(f) The authority of the Secretary of the Army to prevent obstruction to navigation in the navigable waters of the United States is extended to petroleum deepwater port facilities located on the outer Continental Shelf.

"*Provisions as non-exclusive*

"(g) The specific application by this section of certain provisions of law to the subsoil and seabed of the outer Continental Shelf and the petroleum deepwater port facilities or to acts or offenses occurring or committed thereon shall not give rise to any inference that the application to petroleum deepwater port facilities, acts, or offenses of any other provision of law is not intended.

"(h) To the extent that the Federal Water Pollution Control Act or the Clean Air Act require or presuppose action on the part of any state, such action may, as appropriate, be waived or taken by the Administrator of the Environmental Protection Agency. A petroleum deepwater port facility licensed under this Act shall not be considered 'a vessel or other floating craft' for purposes of Section 502(12) of the Federal Water Pollution Control Act."

It should be pointed out that subsection (b)(2) of the proposed Section 111 is not included in the OSCLA, but (b)(2) is included to be consistent with the desire that foreign flag vessels and cargo owners using petroleum deepwater port facilities will be subject to U.S. jurisdiction even though the acts of such persons may be thought to have occurred on the high seas.

It should also be noted that our Recommendation 2. B. above suggests an additional subsection to Section 111 to cover the economic jurisdiction of the ICC.

Recommendation 17

Section 112 preserves to the states their submerged lands rights, namely "all applicable laws or regulations of such state or possession to the extent not inconsistent with federal law or regulation. Nothing in this Act shall be construed as precluding a state from imposing, within its jurisdiction, more stringent environmental or safety regulations." The last sentence may be interpreted to mean that state environmental or safety regulations do not need to be consistent with the United States Constitution or paramount federal law, which cannot be what Section 112 intends. Furthermore, it seems desirable to reiterate the paramount rights retained by the United States in the submerged lands, 43 U.S.C. §§ 1311(d) and 1314(a). Thus, Section 112 should be amended to make it clear that the authority of the United States in the Submerged Lands Act is not diminished by Section 112. The last sentence of Section 112, as appears in the Administration Bill should be deleted and the following substituted: "Nothing in this section shall affect the paramount rights of the United States pursuant to the Submerged Lands Act, 43 U.S.C. §§ 1311(d) and 1314(a)."

The federal paramount rights pursuant to the Submerged Lands Act comprise the constitutional authority of Congress to improve navigation and the rights to regulate commerce, navigation, national defense and international affairs.

Recommendation 18

The following language should be added as a part of Section 113:

"This Act shall not be applied in any manner to require the license of a petroleum deepwater port facility to provide supply services to vessels which may unload at or otherwise use the facility or to provide for the passage of persons through the facility for transportation between ports, for shore leave, or for immigration."

[Whereupon, at 11:55 a.m., the committee recessed, to reconvene at 10 a.m., Wednesday, June 27, 1973.]

OFFSHORE PORTS AND TERMINALS

WEDNESDAY, JUNE 27, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:10 a.m., in room 1334, Longworth House Office Building, Hon. Leonor K. Sullivan (chairman of the committee) presiding.

The Chairman. The committee will come to order.

The Committee on Merchant Marine and Fisheries is continuing the hearings begun several weeks ago on the problem of the construction and operation of deepwater offshore ports and terminals for the reception of our increasing oil imports.

We are trying to hear from every facet of interest of the public in how we should proceed on this very important matter, and as many of the committee members know, hearings are being held in all three committees, Public Works, Interior, and our committee, because all three of us have some kind of jurisdiction over some parts of the problem.

We hope after all the hearings are concluded that we can combine our interests and produce a good comprehensive bill as the answer to this very necessary problem.

This morning we are having individuals before us from various States.

I will ask counsel, is this in reply to the letters that were sent to the Governors requesting someone to come to the committee to represent the interest of the particular States?

Mr. Heyward. Yes, Madam Chairman.

The Chairman. What I would like to do is call the four witnesses we have this morning, one from Delaware, two from Alabama, and one from Texas, up to the witness table at the same time. We would like to have you present your statements, and then even though your views are the opposite to one another, I think we can discuss the whole thing with members of the committee to try to draw out information from you on your particular viewpoint.

It does not make any difference if your views conflict.

I might at this point say that by letter of June 13, 1973, I invited Hon. George C. Wallace, Governor, State of Alabama, to have a representative present his views on H.R. 5091 and H.R. 5898.

A similar letter was addressed to Hon. Dolph Briscoe, Governor of Texas and to the Hon. Sherman W. Tribbitt, Governor of Delaware.

At this point in the record I will direct that my letter to Governor Wallace dated June 13, 1973, and the reply of Governor Wallace, together with the reply of Governor Briscoe appear in the record at this point.

[The documents referred to follow:]

U.S. House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C., June 13, 1973.

Hon. George C. Wallace,
The Governor, State of Alabama,
Montgomery, Ala.

Dear Governor Wallace: The Committee on Merchant Marine and Fisheries began a series of hearings on June 12, 1973, relating to one segment of the overall energy problem now facing our nation. The aspect with which the Committee is concerned involves the potential increase of foreign crude oil importation and the role that can be played in handling that increase by the construction and operation of deepwater offshore terminals for the accommodation of large tankers. In its hearings, the Committee intends to explore all facets of the problem, including the need for such offshore facilities, as well as the design and operation requirements that should be imposed to insure the adequate protection of the marine environment and coastal areas, should it be decided that such facilities should be built.

While there is an overall national interest involved in the consideration of this problem, there is no question but that the coastal states will be directly affected and, therefore, their views should be carefully considered in the preparation of any legislation. For that reason, I would like to invite you, or an appropriate representative of your State, to appear before the Committee on Wednesday, June 27, or Thursday, June 28, to discuss those aspects of offshore terminals construction and operation of interest to your State. In particular, the Committee would be interested to receive any information which you have acquired on this subject and to receive whatever views you might wish to express.

The specific bills pending before the Committee which are being used as a basis for the hearings are H.R. 5091 and H.R. 5898, copies of which are enclosed.

The hearings will begin at 10:00 a.m., in room 1334, Longworth House Office Building, Washington, D.C. For your information, I am enclosing a copy of extract language from the Committee Rules relating to testimony, but I would like to add to the minimum 50 copy requirement prescribed in the testimony. Should there be any additional question, your staff may contact Francis D. Heyward, Staff Counsel, in room 1337–A, Longworth House Office Building, Washington, D.C. 20515, or by telephone at 202–225–3728.

I hope that your schedule will permit you to appear personally, but if this is not possible, the Committee would welcome testimony from your representative. If, in lieu of testimony before the Committee, you prefer to forward a written statement for the record, you may be sure that the Committee will give it careful consideration.

I would appreciate information on your decision as soon as practicable.

Sincerely,

Leonor K. (Mrs. John B.) Sullivan,
Chairman.

State of Alabama,
Montgomery, June 19, 1973.

Leonor K. (Mrs. John B.) Sullivan,
Chairman, Committee on Merchant Marine and Fisheries, Longworth House Office Building, Washington, D.C.

Dear Mrs. Sullivan: In response to your letter of June 13 concerning the hearings before your committee on H.R. 5091 and H.R. 5898, please be advised that the Honorable Lionel W. Noonan of the Alabama State Senate and Dr. E. Mueller, Executive Director of Ameraport, will appear personally before your committee to discuss the efforts of Alabama and Mississippi to locate a deepwater terminal off the Alabama-Mississippi coast.

It would be appreciated if you could schedule Senator Noonan's appearance on Wednesday, June 27. Our Legislature is in session at the moment, and it would be most helpful if he could appear on that date.

Yours very truly,

George C. Wallace,
Governor.

Executive Department,
Austin, Tex., June 22, 1973.

Hon. Leonor K. Sullivan,
House of Representatives, Chairman, Committee on Merchant Marine and Fisheries, Longworth House Office Building, Washington, D.C.

Dear Mrs. Sullivan: I appreciate your invitation to appear before the Committee on Merchant Marine and Fisheries hearings on deep water offshore terminals. Texas has a long and well deserved reputation as a national leader in both marine affairs and energy production. We fully intend to maintain that leadership in the future. We take a vital interest in any proposed federal action that impacts upon these industries.

Offshore terminals for handling the new class of Very Large Crude Carriers (VLCC) obviously have great significance for both the private sector industries and to our entire State economy. For this reason, I wish to designate General James U. Cross, Executive Director of the Texas Offshore Terminal Commission, as our official spokesman to these hearings, and ask that you extend to him this recognition.

The Texas Offshore Terminal Commission is a duly authorized State agency, by law and by Executive appointment, representing the State of Texas in matters pertaining to offshore terminals on the Texas Gulf Coast.

I understand General Cross will have a prepared statement to deliver to the Committee. I endorse this statement, along with the general endorsement of the Texas Council on Marine-Related Affairs which is to accompany the presentation.

Thank you for your consideration in this matter and we wish you and your Committee every success in your important deliberations.

Sincerely,

Dolph Briscoe,
Governor of Texas.

The Chairman. No formal reply was received from Governor Tribbitt. However, his representative is here to testify.

Would the Honorable Clifton E. Morris, secretary, Department of Highways and Transportation, State of Delaware come up to the table?

Senator Lionel W. Noonan, chairman and Dr. John E. Moeller, executive director, Ameraport Corp., State of Alabama, and Brigadier General James U. Cross, Texas Offshore Terminal Commission, State of Texas—if you gentlemen will join Mr. Morris at the table, we could hear you as a panel.

Gentlemen, I would appreciate it if each of you could take 15 minutes, but no longer, to either read your statement, or summarize it, and give us the main and important highlights of the statements that you have prepared. We will then proceed to question all of you.

As your name is called, then, if you would try to summarize or read your statement within that time limit it would be helpful. We will call now on the Honorable Clifton E. Morris, secretary, Department of Highways and Transportation, State of Delaware.

STATEMENT OF HON. CLIFTON E. MORRIS, SECRETARY, DEPARTMENT OF HIGHWAYS AND TRANSPORTATION, STATE OF DELAWARE

Mr. Morris. Madam Chairman and members of the committee, I am appearing on behalf of Governor Tribbitt, who is tied up with legislative matters and is sorry that he could not be here.

I would like to say that I have given you my paper, which is really the Governor's paper, and I am going to omit the graphs and try to get through this as soon as possible, but give you the meat of his white paper.

The CHAIRMAN. Fine.

Mr. MORRIS. The people of Delaware are deeply concerned about the quality of life for themselves, their children, and unborn generations of Delawareans. A major part of this concern involves the quality of our natural environment and the wisest use of our limited natural resources.

Being a small State with a relatively long coastline, the waters and beaches and wetlands of our coastal area are within easy reach of our people, as well as tens of thousands of visitors from nearby metropolitan centers, and I might say that is Washington, Baltimore, Philadelphia and in the area are a major natural resource of Delaware important in ecological aesthetic, and recreational as well as economic terms.

Recognition of the value of our coastal resources and necessity to protect them from misuse and despoilation is evidenced by a series of recent studies by agencies and task forces at the State level including a study in 1970 of potentials for a Delaware deepwater port, the report of the Governor's task force on marine and coastal affairs in 1970 and 1971 on the coastal zone of Delaware, and the study completed in January of 1973 of the Delaware Bay oil transport committee on energy, oil and the State of Delaware.

Further recognition of the value of our coastal zone is evidenced by State regulation of use of our subaqueous lands, and of industrial and offshore terminal operators, regulated by our Coastal Zone Act.

The potential impact of the petroleum industry, in particular, and the possibility of a superport in or near Delaware is causing great concern among Delawareans.

The people have expressed this concern and their opposition to superports and related land uses in Delaware's coastal zone at a number of public hearings, as well as through letters to State legislators and officials, and to newspaper editors.

Prior to its enactment, the concept of coastal zoning received strong endorsement by a majority of the speakers and those in attendance at a series of public hearings held in May and June, 1971 by the general assembly.

In January of this year, at a public hearing held at Rehoboth Beach, there was virtually unanimous opposition to a superport in or near Delaware by the over 800 people who attended it.

The weekday afternoon hearing was called by the Army Corps of Engineers as part of its study of northeast Atlantic coast superport sites. At that Rehoboth Beach public hearing, I expressed my firm opposition to superports and similar facilities within Delaware's territorial waters and my deep concern over the possibility of a superport being located in Atlantic offshore waters beyond the State of Delaware which could pose serious hazards to our beaches, bays, and wetlands.

I went on to express my concern over the landside effects of a nearby superport on Delaware. I would like briefly to reiterate this concern.

LANDSIDE IMPACTS OF A SUPERPORT ON DELAWARE

At two of the recent hearings held by the Army Corps of Engineers on the subject of a deepwater port on the north Atlantic coast, the State of Delaware went on record informing the Corps of Engineers that a deepwater port in Delaware Bay would be prohibited by the Delaware Coastal Zone Act and that, possibly, a port off Cape Henlopen in the Atlantic Ocean would also be prohibited by the Delaware Coastal Zone Act.

However, in the notice for that hearing, there is a recommendation that if the design standard for the port allows vessels of 325,000 tons, then a facility should be constructed in Delaware Bay, off Big Stone Beach.

While the Corps of Engineers acknowledged that such a facility would be prohibited by the Coastal Zone Act, it did not conclude that, therefore, the facility is not feasible in Delaware.

While effectively acknowledging the Coastal Zone Act for the docking facility off Big Stone Beach, the Corps of Engineers assumed that the Coastal Zone Act would prohibit onshore development in Delaware. This apparently was the Corps' assumption, since nowhere in their summary of environmental considerations did they assess the landside impact of a Big Stone Beach facility nor a Cape Henlopen facility.

It seems to me that such an assessment of landside impacts should have been prepared. In order to fill this void in the Corps of Engineesr' environmental summary, we attempted to apply the Corps' estimate of landside impact for southern New Jersey to Delaware.

The State Planning Office forecast four types of landside effects by the year 2000. These are: population; employment; residential and industrial land use; and sewage disposal. There would be other serious landside impacts of a deepwater port, such as groundwater withdrawal, increased air pollution, and increased traffic congestion, but these four impacts are illustrative of the major magnitude of the consequences to be expected from a deepwater port in our near Delaware.

If a deepwater port is located in the Delaware Bay, its landside effects on Kent and Sussex Counties by the year 2000 would likely be as follows:

POPULATION AND EMPLOYMENT

TABLE I.—KENT AND SUSSEX COUNTIES

	1970 (Actual)	2000 (without port)	(with port)
Population	162,248	237,400	1,060,100
Total employment[1]	37,701	63,050	305,900

[1] Employment covered by employment security laws.

In Kent and Sussex Counties, a deepwater port could result in almost five times more population and total employment than is expected without such a port. The year 2000 employment figure is based on the multiplier effect of 4x referred to on page 20 of the Corps' "Summary of Environmental Considerations." Population with a deepwater port in the year 2000 is based on a ratio of actual employment to population in 1970 applied to the year 2000.

LAND USE ACREAGE

What would these year 2000 employment and population figures mean to Kent and Sussex Counties in terms of land use acreage?

TABLE 2.—KENT AND SUSSEX COUNTIES

	1970 (actual)	2000 (without port)	(With port)
Residential acreage	20,512	26,400	102,000

The year 2000 figure with a deepwater port is based on assuming each employee will require one-third of an acre for housing, which means that Kent and Sussex Counties will have over four times more land used for housing in the year 2000 as a result of a deepwater port than they would have without the port.

TABLE 3.—KENT AND SUSSEX COUNTIES

	1970 (actual)	200 (without port)	(With port)
Nonresidential Acreage	8,491	14,547	89,100

Based on the Corps of Engineers' report approximately 45,000 acres would be directly required for terminal, refinery, and petrochemical operations, of which 20,000 acres, or 44 percent, would be needed in the immediately adjacent areas—which in this case, would be Kent and Sussex Counties.

The Corps also stated, however, that a multiplier effect of four appears valid in determining total employment that would be generated by an installation of this type. Therefore, an increase of approximately 552,000 (4×138,000) in total employment would result requiring over 182,000 acres for industrial use.

Again, assuming roughly 44 percent of this acreage would be needed in the immediate area, the total additional industrial land requirement in Kent and Sussex Counties would be 80,150 acres. This does not include the additional land that would be required for increased transportation needs. Increases in total employment for Kent and Sussex Counties would be approximately 242,900 (552,000 ×.44) resulting in a total population increase of 882,700.

In terms of the sewerage impact, according to the Army Corps of Engineers, at secondary treatment levels the effluent from new refineries and petrochemical plants resulting from a Delaware Bay deepwater port would have a biological oxygen demand (BOD) content equivalent to the raw, untreated sewage of 845,000 people in the mid-Atlantic region. This would be worse than having no sewage treatment at all for the entire population of the State and the raw sewage were dumped in the Bay.

With regard to the increases in water pollution levels, it should be noted that the State of Delaware is engaged in an ambitious program to clean its rivers and streams in cooperation with local and State Governments.

To date, the State has appropriated $13 million and has programed an additional $30 million over the next 6 years. The goal of this program is to provide 90 percent treatment for 90 percent of Delaware population.

The effect of the estimated development generated by the proposed port would be to place Delaware in a significantly worse situation relative to water pollution than it has ever been. In other words, this expenditure of funds would be for nothing.

In addition to the effluent resulting directly from refinery and petrochemical industry operations there would be the effluent disposal arising from the population attributable to this industry in lower Delaware.

This brief presentation gives some idea of the serious magnitude of landside impacts to be expected in Delaware from a deepwater port in Delaware Bay or offshore in the Atlantic, near Delaware.

The corps' own words taken from its "Summary of Environmental Considerations" neatly summarizes what Delaware can expect as a consequence of the deepwater port.

The corps says.

> Just as important (as port environmental impacts), perhaps more important, is the impact upon the general character of a given area as it changes from undeveloped to industrialized.* * * (Page 15).

Speaking of the impact on Cumberland and Cape May Counties, in New Jersey, the corps states that they will take on the character of industrialized Middlesex County today.

Applying the same reasoning to Delaware, substitute Kent and Sussex Counties and industrialized New Castle County in this statement, and you get a picture of what the two southern Delaware counties can expect to become within a generation. Lower Delaware could become a highly industrialized, polluted urban complex similar to Marcus Hook, Pa., or the Bayonne-Cartaret area of northeastern New Jersey.

State regulation of petroleum conveyance: The Delaware Valley area is presently not served by any pipelines for crude oil transportation, nor by rail tank cars or tank trucks used for crude oil shipments due to their higher cost over tanker shipment. The area is served by pipeline delivering refined products.

The State of Delaware is considerably concerned over pipeline location and regulation, especially in regard to their operation and maintenance. Of particular concern are pipelines of any kind, which run underwater or through wetlands. There have been incidents involving pipeline breaks which possibly could have been avoided if there had been adequate regulations and inspections.

In this regard, I have proposed regulation that provides strong regulations to provide for State regulation and monitoring of interstate pipelines.

Superport proposals involving pipelines and related storage operations in Delaware's coastal zone would be prohibited based on a decision by the State of Delaware on a pipeline company application under terms of our Coastal Zone Act. The result of this decision is to prevent any deepwater port proposals which depend on a pipeline and storage facilities in Delaware's coastal zone.

In addition, the State of Delaware intends to exercise the authority to review and comment on both crude and refined product pipelines in Delaware, outside of the coastal zone, which pass through the State between points outside of Delaware.

In terms of offshore oil transfer operations, since the beginning of lightering in the Lower Delaware Bay over 10 years ago, no major oil spills have occurred which are directly attributable to that operation.

Nevertheless, the probability of spills from collisions and grounding of tankers and lighters, or from operational malfunctions and accidents is of grave concern to us. There is no denying that oil spillage will occur in the vicinity of oil operations, and that such spillage will be detrimental to marine life and recreational values of the shoreline.

Each year, approximately 300 million or more barrels of crude oil are shipped by tanker, lighter or barge via the Delaware River and Bay to oil refineries in Delaware, Pennsylvania, and New Jersey.

Delaware intends to take strong regulatory measures to control those operations, and to prevent spills. While we recognize that lightering operations are themselves not desirable in the context of protecting our vital natural coastal resources, we accept the necessity for such operations.

We intend, however, to provide strict operational regulations, procedures for fixing of damages and for provision of an emergency clean-up fund and the establishment of boats, personnel, and equipment as needed to monitor conveyances, barging or lightering operations within the limits of our waters through State legislation.

I hope that the Congress will recognize the States' interests in and authority to regulate oil transfer and conveyance in order that Delaware and the other States will have the clearly recognized means to protect themselves against the harmful consequences of oil spills.

I further hope that the Congress will enact such necessary Federal laws as to clearly establish the responsibility for those who cause oil spill damage to pay for all clean-up and damage costs. I believe the way the law is now, the burden is upon those who suffer oil pollution damages to take legal action to identify the polluter and to attempt to collect for damages suffered.

Right of State review and veto of superport plans: In addition to regulation of petroleum conveyance, I believe it is essential that States have the right of review of plans for all types of superports at an early stage in the planning process prior to any firm commitment to project construction. This review process should be mandatory, and should apply to all superport projects that can vitally affect the environment, natural resources, economy, or public welfare of a State whether or not the superport will be physically located within that State.

Criteria for determining when a State's vital interests will be affected by a superport outside of its State boundaries should be part of the law establishing this right of State review. Such a law must also include a provision that no superport construction may be initiated prior to completion of this State review, and a reasonable time frame for that review must be established. These provisions should be incorporated in H.R. 5091 and in H.R. 5898.

State recommendations for superport plan changes and for design and operational measures to eliminate or minimize pollution hazards must be taken into account—this should be a mandatory requirement prior to the issuance of any Federal permits or to the expenditure of any Federal support funds for a superport and its ancillary facilities.

In addition to the authority to review superport plans, States must have the right to prevent construction of any superport, whether or not it is located within State boundaries, that will probably be severely and irreversibly harmful to the natural and cultural environment and the right of the people to a healthy and happy life.

Superports in the larger context of a national energy policy: While the question of a superport for petroleum operations in or near Delaware is of immediate concern, I think it is important to note that superports and the importation of petroleum are simply part of a much larger problem; that problem is the one of energyuse and the need for a national energy policy.

I hope that the Congress and the administration will take measures to establish such a national energy policy that will provide priorities and guidelines for public agencies and private interests, and will be broadly encompassing to include research on such as solar, wind, tidal, and geothermal energy sources as well as fossil fuels and atomic power, and to include policies to maximize efficiency of energy production, transmission and consumption .

If the Congress does take action on a national energy policy, I think that it may well question a policy of increasing reliance on petroleum sources in politically unstable foreign land far removed from the United States, and may wish to encourage utilization of alternative energy sources within our national boundaries.

With regard to H.R. 5091, I would offer several changes that would make the bill more acceptable to Delaware:

1. Section 402(2) [page 2, line 13]. An addition should be made so that the line reads: "* * * to prevent damage to offshore coastal waters and nearby land of * * *"

2. Section 402(b) [page 3, lines 17–20]. Lines 17 to 20 should be deleted so that all structures are regulated by and subject to the act.

3. Section 403(a) [page 4, line 14]. Add: "The Secretary shall not certify the construction or operation of a structure without prior approval of the project by all appropriate State and local governments pursuant to State and local laws and regulations."

4. Section 403(c) [page 6, line 14]. Add a new "(9) The developmental and land use implications of such structures on nearby land."

5. Section 404(a) [page 6, line 25]. "* * * cost, and shall be transmitted automatically, at no cost, to affected State governments, unless such information may * * *"

With regard to H.R. 5898, which we would support if H.R. 5091 cannot be passed, I would suggest the following additions:

1. Section 1301(a) [page 2, line 4]. "* * * prescribe. The Secretary shall not grant a permit under this section without prior approval of the project by all appropriate State and local governments pursuant to State and local laws and regulations."

2. Section 1301(b)(2) [page 2, line 11]. Add: * * * facility, including the developmental and land use implications of such port or terminal facility."

In conclusion, I wish to emphasize that the best superport location, from Delaware's viewpoint, would be somewhere far removed from our shores.

I thank you, Madam Chairman, and members of the committee for this opportunity to present Delaware's views on the legislation in question.

The CHAIRMAN. Thank you very much.

Now, I will call upon Senator Lionel W. Noonan, chairman, and Dr. John E. Moeller, executive director, Ameraport Corp., State of Alabama.

Do both you and Mr. Moeller have statements?

STATEMENT OF STATE SENATOR LIONEL W. NOONAN, CHAIRMAN, AMERAPORT CORP.; ACCOMPANIED BY DR. JOHN E. MOELLER, EXECUTIVE DIRECTOR, AMERAPORT CORP., STATE OF ALABAMA

Senator NOONAN. We do, Madam Chairman.

The CHAIRMAN. Senator Noonan, would you start, please?

Senator NOONAN. Madam Chairman and distinguished members of the committee, I would like to express appreciation on behalf of Governor Wallace for the kind invitation to attend this hearing, and to also express my appreciation for representing the Governor at this meeting.

Dr. Moeller, in those areas that I feel unqualified to answer any questions in a few moments, I will defer those particular questions, more technical questions, to Dr. Moeller.

Before giving the Governor's statement, I would like to also enter into the record some background remarks based on my own experience with Ameraport Corp.

The CHAIRMAN. You may.

Senator NOONAN. Thank you, Madam Chairman.

Fourteen months ago Alabama was somewhat suprised at the limited attention given to the east gulf by various consultant firms to determine the feasibility of locating a deepwater port facility in the eastern Gulf of Mexico.

It determined to be feasible, an east gulf location, and the Ameraport concept was later conceived to focus on considerations on the east Gulf of Mexico.

Ameraport is a multiregional in scope, and geographically has as a point of entry, the east gulf, of three tier States, which expands to 23 States from the Gulf of Mexico to Canada.

The Ameraport concept was patterned after Europort at Rotterdam. It is not mutually exclusive. Rather we foresee the monobuoy and cluster buoy systems and the later prototype superport for handling dry bulk items at several locations in the Gulf of Mexico, such as at Freeport, Texas, Grand Isle off Bayou LaFource, and off the Mississippi coastline south of Petite Boise Isle.

Ameraport has emphasized environmental, geological, hydrological, socioeconomic, transportation, and international legal implication research.

As a matter of fact, a year ago the Ameraport task force of Alabama broke its task force down into some 10 districts in the State, undertook its own independent drive from various individuals in the areas of the environment, the areas of business and labor, et cetera.

Six months later we were able to secure some $351,000, contributed by in excess of 800 individuals in the State of Alabama.

We subsequently joined with Mississippi and Tennessee in developing the Ameraport Council.

Madam Chairman and distinguished members of the committee, I would like now to read the Governor's statement, if I may.

The State of Alabama is pleased to have this opportunity to present its views on the proposed bills H.R. 5091 and H.R. 5898 presently under consideration by this Committee.

Referring specifically to Section 403, Section c, Subparagraphs 1 through 8, we are in complete agreement that the factors as enumerated must certainly be taken into consideration for any permit that might be granted, and to this end the AMERAPORT Council and the AMERAPORT Corporation have directed their efforts to specifically identify these elements and specific reference is made to that part of the AMERAPORT Council Preliminary Study dated December 15, 1972, beginning at Page 1 of the supplement chapter entitled, "The Ecological Impact of a Deepwater Port in the Northeastern Gulf of Mexico."

I believe each of the members have this study before them.

The next area of concern and study was the hydrography of the East Louisiana-Mississippi-Alabama Continental Shelf and its effect on any possible spill. Data is contained in pages 9–18 of supplement referenced study. The summary regarding actual site location is contained on Page 19 of the supplement. Reference and data sources together with supporting tables to support the statements previously referenced are found beginning on supplement page 20 and continue through the supplement and appendices to the Preliminary Study.

It is, however, our considered opinion that to best assist in solving the various problems connected with deepwater terminals, VLCC's and other operations on the Outer Continental Shelf, that the Department of Interior, because of its already existing involvement in management of drilling on the Outer Continental Shelf would be the better agency to serve as the permit authority. This is not to demean the role of the other agencies who specifically have an interest in and a concern with areas that would normally fall under their respective jurisdictions, and these agencies should have a voice in the permit granting process, but it is our recommendation that they serve as advisors or consultants rather than as the final authority, using Interior as the coordinating body and clearing house.

The proposed bill, in our opinion, does in effect make provision for consultation with other interested agencies such as the Department of Transportation, EPA, as well as other Federal, State and local offices who might appear to have an interest in the matter.

While, in effect, under Section 403(d), this feature is covered, it still remains our considered opinion tht the Department of the Interior, because of its already established responsibility concerning the Outer Continental Shelf activities would be better suited to perform this function.

AMERAPORT fully supports the need to provide an affirmative course of action to determine the environmental effects of a deepwater terminal both on the offshore portion of the facility as well as the anticipated industrial development activities onshore which would naturally result from the location of a deepwater terminal.

That portion of Section 403 that relates to a two-year lead time before a permit can be granted is, in our opinion, likely to work severe hardships and is believed unrealistic. There is currently available throughout the world technical data, construction data, and operational data concerning deepwater terminals, and it is our understanding that there are approximately 150 such terminals in operation at this particular time.

To impose a two-year study period of plans will place an unreasonable burden and delay on those who are attempting to solve the energy crisis via the use of VLCC's and deepwater terminals.

In effect, what this will amount to is that we will be forced to use conventional sized tankers in ever increasing numbers, thus increasing the opportunities for collision and spills far beyond that which might be anticipated by use of a deepwater terminal.

Harbor congestion which will result from the increased importation of foreign crude in conventional sized tankers is indeed a frightening prospect.

In addition, the ultimate cost to the consumer in terms of added transportation costs by the use of conventional sized tankers would cause the consumer to pay more for gasoline, heating oil, et cetera, than he normally would if the economy of large scale transportation were used.

For example, in the Eastern Gulf area studies indicate that a 500,000 barrel a day throughput would be economically sound and would justify a deepwater terminal, however, it is anticipated that the demand for imported crude in the Eastern Gulf area would approximate 1.2 to 1.6 million barrels a day in approximately the year 1980.

In addition, the capacities of the AMERAPORT location to serve as a transfer point via pipeline to inland refineries would permit an additional 1.5 million barrels a day throughput of crude for a total potential terminal capacity of three million barrels a day.

Detailed economic studies indicate that a deepwater terminal located off the Alabama-Mississippi Coast would provide the opportunity for the location of additional refinery capacity in the Alabama-Mississippi area which would then permit the shipment of finished products to the East Coast vis-a-vis, New York-Philadelphia area, at a minimum transportation cost to the consumer.

In conclusion, therefore, may I say that we support the intent of this bill as reflected in Items 1–8 under Section 403(c) and we do not support that part of Section 403(b) imposing a two-year study period, and would like to further suggest that the Committee give strong consideration to placing this responsibility in the Department of the Interior.

This concludes the Governor's statement.

I have one or two separate supplemental remarks, Madam Chairman.

The CHAIRMAN. All right, if they are short, we can have you make them, sir.

Senator NOONAN. They are mere references.

I would like to first refer the committee's attention to a recent report of the U.S. Corps of Engineers delivered at public hearings in Mobile, Tampa, New Orleans, and Galveston on May 24 through 27, in which they evaluated the economic transportation throughput costs of the offshore deepwater port facility at some 15 locations in the Gulf of Mexico.

The lowest cost was a cost determined to be a cost combination of three site locations.

This combination site location was identified as Freeport, Tex., Grand Isle off Bayou LaFourche, La., and the Mobile-Pascagoula area off Petit-Bay Isle with a savings of some 7.34 cents per barrel.

I would also like to refer the committee's attention to a comparison, statistical and tabular comparison, prepared for Ameraport Corp.

by Battelle Research Laboratories, indicating the crude and petroleum transshipment costs in the Gulf tier States, in PAD 3 to the Atlantic Coast States in PAD 4, the total cost of transshipment of a barrel of oil from the Ameraport area through a location here at Linden, N.J., in the Ameraport area would cost $1.36, from the Louisiana location, $1.41, from the Texas location, $1.45.

The cost of transshipment for refined oil in PAD 1 to the various populous locations in the vicinity of Linden, N.J., would show a savings of one-half a cent per gallon if the refineries were located in the vicinity of Linden, N.J., over the Ameraport Louisiana and Texas locations.

We have the tabular form to show the economic transportation throughput, and would like to submit this at a later date.

The CHAIRMAN. It is not in the report?

Mr. NOONAN. No.

The CHAIRMAN. Without objection, if you will submit it at a later date, it will be made part of the record.

Mr. NOONAN. I will do so.

[The information had not been received by the time this hearing went to press.]

The CHAIRMAN. Now, Dr. Moeller, would you give us your statement?

I notice you have a lot of supportive statements and so forth that we can have the entire statement put into the record if you would like, and you can summarize your study.

Mr. MOELLER. Yes, ma'am.

Thank you, Madam Chairman and distinguished members of the committee.

I will attempt to make my remarks very brief and would like to suggest, as the chairman has, that the study identified as the Ameraport Interim Study of the Ameraport Research Team in the Alabama-Mississippi Ameraport Preliminary Study, dated December 15, 1972, and the Ameraport Corp. Progress Report, dated June 1, 1973, which I have furnished to the committee, be made a part of the record.

The CHAIRMAN. Without objection, it will be done.

[The documents referred to follows:]

STATEMENT OF THE AMERAPORT CORP.

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That portion of Section 403 that relates to a two-year lead time before a permit can be granted is, in our opinion, likely to work severe hardships and is believed unrealistic. There is currently available throughout the world technical data, construction data, and operational data concerning deepwater terminals and it is our understanding that there are approximately 150 such terminals in operation at this particular time. To impose a two-year study period of plans will place an unreasonable burden and delay on those who are attempting to solve the energy crisis via the use of VLCC's and deepwater terminals. In effect, what this will amount to is that we will be forced to use conventional sized tankers in ever increasing numbers, thus increasing the opportunities for collision and spills far beyond that which might be anticipated by use of a deepwater terminal. Harbor congestion which will result from the increased importation of foreign crude in conventional sized tankers is indeed a frightening prospect. In addition, the ultimate cost to the consumer in terms of added transportation costs by the use of conventional sized tankers would cause the consumer to pay more for gasoline, heating oil, etc., than he normally would if the economy of large scale transportation were used.

For example, in the Eastern Gulf area studies indicate that a 500,000 barrel a day throughput would be economically sound and would justify a deepwater terminal, however, it is anticipated that the demand for imported crude in the Eastern Gulf area would approximate 1.2 to 1.6 million barrels a day in approximately the year 1980. In addition, the capacities of the Ameraport location to serve as a transfer point via pipeline to inland refineries would permit an additional 1.5 million barrels a day throughput of crude for a total potential terminal capacity of 3 million barrels a day.

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Alabama Law Institute—Preliminary Synopsis of Legal Issues Concerning the Proposed East Gulf Superport

(By Prof. John E. Moeller, College of Commerce, University of Alabama, May 9, 1972)

Appendix

Part I.—Legal Questions and Implications Concerning the East Gulf Superport

INTRODUCTION

Without knowing the manner of creation, the mode of operation, or the variety of functions of the offshore port, its distance from the shore, or whether it will be a private or public facility, it is difficult to forecast the types of legal complications which will develop as a result of the port's unique geographic setting. However, the nature of the proposal indicates certain areas which will have the greatest probability of occurrence as far as legal implications are concerned. These areas of law are enumerated below.

The first problem area deals with International Law. Here the concern is that customary international law and treaties may limit in various ways the siting and method of operation of the proposed Superport. The balance of this memo is largely concerned with this problem area.

The second problem area deals with Federal Legislation and administrative regulations. This includes the Outer Continental Shelf Act of 1953 and a large variety of federal law and regulations concerning the operations of the port. (Labor Law, Workmen's Compensation, Maritime Law. Customs. Safety Legislation, Pollution, etc.).

The third problem area concerns state law and administration which may be applicable to port operations, such as police jurisdiction.

The fourth area deals with law yet-to-be-created to regulate and govern the operation of the Superport. Such law will be formulated by both federal and state authorities in cooperation. In form, it may be federal law with a large imput from the authorities of the adjacent state, or it may be state law formulated with the guidance of federal authorities and enacted by the state legislature. It can readily be seen that much importance must be team of federal officials representing the Department of Defense, Justice, attached to the legal facets in the practicing day-to-day liaison between a Labor, Treasury, State and representatives of the State of Alabama in the planning stages of this venture.

The following discussion should in no way be construed as either being complete or comprehensive but are those items which appear most likely to require some form of resolution. A partial identification of the areas of Federal concern would be as follows: Federal—customs duties, pollution, intercoastal shipping, general Federal Maritime law, and an indepth study of the various administrative bodies together with their regulations that might be involved. State law would involve, among other things, the general tort, contract law of the state but should not be confined to the State of Alabama but should include Louisiana, Mississippi and Florida. This together with the various administrative bedies established by these various states to cover what might be purely domestic transactions, but which could possibly be applicable to the offshore operations.

It is thought that a possible historical development of interest of the offshore areas would prove helpful in understanding the development of the problems because it appears that there are at least three distinct stages of development. One, before 1953 which might be identified as the immediate post war era and governed primarily by the Truman doctrine. The second stage would be 1953 until 1956. This period of time is significant because the year brought about the Federal Legislation of the subject matter, specifically, the Outer Continental Shelf Lands Act of 1953. In 1956 the problem of use and utilization of the Constinental Shelf became the subject of international conferences which resulted in several conventions and protocols and which were finally ratified and became effective in 1964. We therefore have a twilight zone between 1956 and 1964 and from 1964 until the present, we have the problem of a conflict or a possible conflict between international law as determined by these conventions and the various laws of the United States. It is a well accepted practice of international law and United States law that any conflicts between United States law and conventions or protocols to which the United States is a signatory that the international convention or protocol must be determinant of the principles involved.

Again, without attempting to be absolute in this matter, but merely attempting to indicate the general areas of concern, we break this problem down into the following areas: international law per se; United States law per se; the necessity for resolution of differences in United States law and international law; and finally the applicable state law that might be pertinent as a result of the provisions of the Outer Continental Shelf Lands Act which, by possible interpretation, would indicate that the laws of the adjacent states would govern what would amount to support of services.

PART II.—THE STATUS OF OFFSHORE AREAS BEFORE 1953

The Truman Proclamation 1945. President Truman issued a proclamation in 1945 stating that the United States regarded the natural resources of the seabed and subsoil of its continental shelf as appertaining to the United States and therefore, subject to its jurisdiction and control. It would be well at this time to identify the continental shelf as "generally, submerged land which is contiguous to the continent and which is covered by no more than one hundred fathoms, 600 feet, or 200 meters of water." While this is a presidential proclamation and as such can not amend any pre-existing statute, and which by its own terms was limited in territorial application. Therefore, up to 1953 it can be said with assurance there was not a basis for treating the continental shelf as being within the geographic United States for domestic law purposes absent a specific statute to the contrary.

PART III.—STATUS OFFSHORE AREAS UNDER 1953 LEGISLATION

The Outer Continental Shelf Lands Act 1953. Section 4 of this bill (laws applicable to outer continental shelf) enumerated those Federal Laws which were to apply to continental shelf activities and how they were to apply. For example, structures on the continental shelf were to be treated as U.S. vessels on the high seas for purposes for punishing offenses committed thereon or determining whether acts occurring on such structures constituted offenses under Federal Law governing U.S. vessels. With respect to the Customs Laws the bill provided:

> No merchandise of foreign growth or manufacture shall be brought upon any structure referred to in subsection (a) from any foreign port or place unless it shall have been entered for consumption in the United States in accordance with the customs law and regulations.

This obviously had many defects because for example, it did not deal with customs treatment for articles originating on the Continental Shelf and brought directly to a U.S. port. In view of the provisions treating goods exported from the Shelf as goods exported from a state of the United States, and more importantly, in view of the tariff provisions in effect at that time applying the tariff schedules only to the importation to a foreign country, such articles were presumably not considered to be imported from a foreign country.

The very language of this act, however, creates some problems for example, the definition of a port as commonly accepted is "ports consist of the conjunctions of water and land areas which ships enter for the purpose of loading and unloading cargo and passengers." Various authors have written that a port is a part of internal waters, and therefore, is as fully a portion as state territory as the land itself. Therefore, J. Stark in writing his book, an *Introduction to International Law*, on page 203 suggests that a "site located on the Continental Shelf of the United States could not be a port."

While it is true that the bill as finally passed contains the following provisions:

> The Constitution and laws and civil and political jurisdiction of the United States are hereby extended to the subsoil and seabed of the outer Continental Shelf and to all artificial islands and fixed structures which may be erected thereon for the purpose of exploring for, developing, removing, and transporting resources therefrom, to the same extent as if the outer Continental Shelf were an area of exclusive Federal jurisdiction located with a State...

The effect of the extension provision in Section 4 of the OCS Land Act appears ambiguous and confusing.

This fact was pointed out on the Senate floor by Senator Cordon who described the kind of substantive problems facing the committee in this regard:

> What Federal laws are applicable; what should apply? In what court, where situated, does jurisdiction lie, or where should it be placed? Should new Federal law be enacted where existing statutes are wholly inadequate, or should the laws of abutting States be made applicable? The necessity for answering these questions is clear when we take note of the fact that the full development of the estimated values in the Shelf area will require the efforts and the physical presence of thousands of workers on fixed structures in the shelf area. Industrial accidents, accidental death, peace, and order—these and many other problems and situations need and must have legislative attention.

PART IV.—INTERNATIONAL LAW OF THE SEA CONVENTION ON THE CONTINENTAL SHELF

In 1956 the International Law Commission of the United Nations recommended after several years of study that an international conference be called to adopt this set of principles on the law of sea. Two years later such a conference was held in Geneva and produced four law of the sea conventions including the Convention on the Continental Shelf. That convention was signed on September 15, 1958, for the United States. The Senate gave its advice and consent in May of 1960 and the Convention was ratified by the President in March of the following year. The Convention came into force on June 10, 1964 after ratification by the 22nd Nation, the United Kingdom.

The interpretation of the Convention with respect to the nature and geographical scope of the coastal states rights over submerged land can be important in the application of customs laws, workmen's compensation laws, general tort law etc. Since any inconsistency between its terms and prior statutory law must be resolved in favor of the Convention. The Construction of a Resort or Scientific Research Facility on the Outer Continental Shelf Supplied by Ship either from a U.S. or Foreign Port could bring into focus the Nature of the sovereignty rights of Coastal Nations under the Convention in relation to the Customs. Laws, including the Coast Wise Trade Laws.

In view of the foregoing a review of the possible interpretations of the Convention and its relationship to domestic law is appropriate.

1. Seaward Boundary

The term "continental shelf" is defined in Article 1 of the Convention on the Continental Shelf as: the seabed and subsoil of the marine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 meters or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said sea.

2. Sovereign Rights

Article 2 of the Convention recites that coastal states exercise sovereign rights over the continental shelf for purposes of exploring it and exploiting its natural resources.

3. Physical contact with the Shelf

There is little question that under the Convention the rights of coastal states apply to structures which rest on, or are otherwise attached to or physically connected with, the continental shelf. The same holds true with respect to vessels anchored to the shelf, and engaged in exploration or exploitation of shelf resources. Such structures, vessels or attachments are properly considered extensions of the shelf. Consequently, persons and property present on such structures, vessels or attachments and contributing to an overall exploration or exploitation enterprise on the shelf would be subject to coastal state jurisdiction, including tax and customs jurisdiction.

The rights of coastal states with respect to shelf operations where there is no physical contact with the shelf poses a difficult problem of interpretation and application. The Convention provides that the rights of the coastal states over shelf areas shall not affect the legal status of the superjacent waters as high seas or that of air space above those waters, the susceptability of seismic survey operations for example to coastal state jurisdiction may be open to question. This problem must also be considered in determining the status of the variety of supporting services for Continental Shelf installations. It is possible, therefore, that in reading the Convention broadly it would appear proper to conclude that as long as there is a real nexus between a particular activity relating to the Continental Shelf and the actual and potential exploitation of shelf resources, coastal state jurisdiction will obtain whether or not there is physical contact with the shelf. Problems such as were evident in the case of Guess vs. Read 290 Fed. 2nd 622 (5th circuit 1961) cert. denied 368 US 957 (1962). In this case the court held that the state law did not apply to a factual situation involving an oil worker killed in a helicopter crash into the high seas. The decision, however, suggests that if the helicopter had crashed on the drilling barge before completing its take-off, a different result might have been reached. This example points up the need for resolvement of such areas as described in the introduction of the problems in Part I.

PART V.—PROBLEMS OF SUPPORT SERVICES

The construction of a facility to handle incoming bulk shipments via tanker will require support services in a form of utilities, such as power plants, water supply, communications, sewerage, firefighting, housing, food service, marine repair, airport (with possible development of SST) including helicopter, each one of these services is covered in domestic law by well established legal principles however, there seems to be incongruity in the law of the sea conventions between the rights of coastal states over the Continental Shelf resources (including the right to tax and impose customs duties) and the limits placed on their rights to enforce tax, customs, and other domestic laws beyond a twelve mile contiguous zone seaward of the coast.

Article 24 of the Convention on the Territorial Sea and the Contiguous Zone provides "in a zone of the high seas contiguous to its territorial sea, a coastal state may exercise the control necessary to: (a) prevent infringement of its customs, fiscal integration or sanitary regulations within its territory or territorial sea; (b) punish infringement of the above regulations committed within its territory or territorial sea.

POLLUTION

One of the major concerns of any coastal nation is the danger of oil pollution to its shores, beaches, fisheries, and other natural resources. This problem is not confined to the United States, however, there are United States laws that cover the enforcement of environmental subjects. Any offshore construction must take into consideration not only domestic (Federal) law but also international law concerning oil pollution.

CONCLUSIONS

It should be self-evident from the problems raised in the foregoing brief identification of problems concerning the Continental shelf that the question of applicable law should be settled legislatively.

While no attempt can be made to identify every statute or international convention or protocol that might apply to the construction of a Superport the following lists of international conventions and Federal acts will give some idea as to the magnitude of this task.

INTERNATIONAL

1897—Comite Maritime International (CMI)
1926—Conference on Oil Pollution of Navigable Waters, Washington, D.C.—Never Ratified.
1948—Convention on the Intergovernmental Maritime Consultative Organization (IMCO), Geneva.
1954—Convention on the Prevention of Pollution of the Sea by Oil, London.
1958—U.N. Conference on the Law of the Sea, Geneva Convention on the Territorial Sea and the Contiguous Zone Convention on the Continental Shelf Convention on High Seas.
1962—Second London Conference on Prevention of Pollution of the Seas by Oil (Amended 1954 London Convention).
1969—Brussels Conference, drafts: International Convention on the High Seas in Cases of Oil Pollution Casualties (public); International Convention on Civil Liability for Oil Pollution Damage (private).
1970—International Convention Relating to the Arrest of Seagoing Ships, Brussels, May 10, 1952. Ratified by Belgium, France, Great Britain, Spain and Portugal to date (1970).

FEDERAL

1899—Refuse Act.
1924—Oil Pollution Act (Original).
1948—Extension of Admiralty Jurisdiction Act.
1950—Federal Disaster Assistance Act.
1953—Outer Continental Shelf Lands Act.
1961—Oil Pollution Act (Implemented 1954 London Convention).
1966—Oil Pollution Act Implemented 1962 London Amendments); Clean Water Restoration Act (Amended 1924 Act).
1970—Water Qualtiy Improvement Act.
28 USC S. 1333 (1964).
46 U.S.C. S. 740 (1964).
33 U.S.C. SS 431–437 (Supp. 1968).
33 U.S.C. S 434.
33 U.S.C. S1001015 (1964).
33 U.S.C. S466a–466-n (Supp. 1968).
33 U.S.C. S433(b).
33 U.S.C. S432.
33 U.S.C. S407 (1964).
43 U.S.C. SS1331–1343 (1964).
30 C.F.R. S250.40 (1969).
30 C.F.R. S250.42 (1969).
34 Fed. Reg. 2503–2504 (1969).
46 U.S.C. S740 (1964).
46 U.S.C. S183 (a).
46 U.S.C. S183 (b).
33 U.S.C. S433.
34 Fed. Reg. 2503 (1969).

Convention on the Intergovernmental Maritime Consultative Organization, drawn up by a U.N. Martime Conference, Geneva, March 6, 1948 (1958) 9 U.S.T. 621, T.I.A.S. No. 4044, 289 U.N.T.S. 3.

Convention on the High Seas, Geneva, April 29, 1958 (1964) 15 U.S.T. 471, T.I.A.S., No. 5578, 499 U.N.T.S. 411.

International Convention for the Prevention of Pollution of the Sea by Oil, London, April 11, 1962 (1966), 2 U.S.T. 1523, T.I.A.S. No. 6109.

43 U.S.C. 1311 (a) (I) (1964).
Pub L. No. 83–212, 67 Stat. 462 (1953), 43 U.S.C. 1331–43 (1964).
43 U.S.C. 1333 (c) (3) (1964).
26 U.S.C. 5041–5051 (1964; Supp. V, 1965–1969).
19 U.S.C. 3 (1964).
26 U.S.C. 7701 (a) (9) (1964).

Sec. 638 (relating to continental shelf areas) was added to the Internal Revenue Code by 505 of the Tax Reform Act of 1969, Pub. L. No. 91–172, 83 Stat. 487.

26 U.S.C. 5704, 5706 (1964).

26 U.S.C. 7701 (a) (9) (1964).

43 U.S.C. 1301 (a) (1) (1964).

ALABAMA STATE LAW

Title 38 Code of Alabama 1940 recompiled 1958.

SELECTED BIBLIOGRAPHY

3 Panel Reports of the Commission on Marine Science, Engineering and Resources VII–199 (Marine Resources, 1969).

Report of the Commission on Marine Science, Engineering and Resources, our Nation and the Sea: A Plan for National Action 122 (1969).

Statement by the President on U.S. Oceans Policy, 6 PRES. DOCS 677 (May 25, 1970). On June 16, 1970 Senator Metcalf introduced S. 3970 to amend the Outer Continental Shelf Lands Act to implement the President's proposal. The United States introduced the proposal as a draft convention to the U.N. Seabeds Committee meeting at Geneva, State Department Press Release No. 229 Aug. 3, 1970.

Metcalf, Tidelands Controversy: A Study in Development of a Political-Legal Problem 4 Syracuse L. Rev. 39 (1952); Shalowitz, Boundary Problems Raised by the Submerged Land Act, 54 Colum. L. Rev. 1021, 1022–26 (1954).

J. Starke, *An Introduction to International Law 203* (1963). This suggests that a site located on the continental shelf of the United States could not be a "port".

Hearings on S. 1901 Amendment Before the Senate Comm. on Interior & Insular Affairs, 83d Cong., 1st 699 (1953).

99 Cong. Rec. 7219, 7226 (1953) 99 Cong. Rec. (1953) (statements of Senators Long of Louisiana and Holland of Texas.)

99 Cong. Rec. 6962 (1953).

99 Cong. Rec. 6965 (1953) After-enacted statutes, unless they specifically so provided, would not normally be regarded as applicable to the shelf under standard rules of statutory construction. Posadas v. National City Bank, 296 U.S. 497, 503 (1936); States v. Yuginovich, 256 U.S. 450, (1920).

United Nations Conference on the Law of the Sea Official Records (7 vols.) U.N. Doc. A/Conf. 13/37–43 (1953); Convention on the Territorial SEA and the Contiguous Zone, U.N. Doc. A/Conf. 13 L. 52, (1964) 2 U.S.T. 1606, T.I.A.S. No. 5639, 516 U.N.T.S. 205; Convention on the High Seas U.N. Doc. A/Conf. 12 L. 53 (1962) 2 U.S.T. 2312, T.I.A.S. No. 5200 450 U.N.T.S. 82; Convention on Fishing and Conservation of Living Resources of the High Seas, U.N. Doc. A/Conf. 13 L. 54, (1966) 1 U.T. 138, T.I.A.S. No. 5969–559 U.N.T.S. 285; Convention on the Continental Shelf, U.N. Doc. A/Conf. 13 L. 53, (1964) 1 U.S.T. 471, T.I.A.S. No. 5578, 499 U.N.T.S. 311. U.N. Multilateral Treaties Deposited with Secretary-GENERAL 346, U.N. Doc. ST/Leg/Ser. D/3 (1970).

North Sea Continental Shelf Cases, (1969) I.C.J. 1, reprinted in 8 Int'l Legal Mat'ls 340 (1969).

Bernfield, Developing the Resources of the Sea-Security of Investment 2 Int'l Law. 67,72 (1967); Goldie, The Contents of Davey Jone's Locker—A Proposed Regime for the Seabed and Subsoil, 22 Rutgers L. Rev. 1, 17 (1968); Nanda, Some Legal Questions on the Peaceful Uses of Ocean Space, 9 Va. J. Int'l L. 343, 364 (1969).

Rep. No. 5, 86th Cong., 2d Sess. 9 (1960) Report of Senate Committee on Foreign Relations on the Law of the Sea Conventions.)

Intergovernmental Maritime Consultative Organization: Draft International Convention Relating to Intervention on the High Seas of Oil Pollution Damage, Int'l. Legal Materials, Vol. 9 (1970), 25–35.

ALABAMA - MISSISSIPPI SUPERPORT

(Preliminary Study)

PLANNING TODAY TO SERVE THE NATION TOMORROW

ALABAMA-MISSISSIPPI JOINT SUPERPORT TASK FORCE

December 15, 1972

Major General Charles Noble
Commanding General
Lower Mississippi Valley Division
Corps of Engineers
Post Office Box 80
Vicksburg, Mississippi 39180

Dear General Noble:

In response to the request of your office the States of Mississippi and Alabama are pleased to furnish the attached studies concerning selected aspects of a feasibility study concerning a deepwater port facility located off the Alabama/Mississippi coast.

The first study is a general summary of the benefits of an east Gulf location. The second study covers the ecological and environmental factors considered, i.e., biology, geology, hydrology, etc., together with supporting data.

The States of Mississippi and Alabama also have prepared an inventory of land availability and other land support potential. This data is not enclosed but will be furnished separately for your use. The State of Alabama will also furnish information on coal exports which was requested by your office.

The Mississippi/Alabama Ameraport Council is continuing research in each of the indicated areas and any or all of the continuing effort will be available to your office upon request.

Respectfully submitted,

THE AMERAPORT COUNCIL

John E. Moeller, Executive Director
Alabama Ameraport Corporation
Alabama Development Office
Montgomery, Alabama

P. T. Bankston, Chairman
Mississippi Superport Task Force
Office of the Governor, State Capitol
Jackson, Mississippi

Enclosures

INTRODUCTION

Numerous studies have been made of our nation's changing energy situation and of the likelihood that our growing energy needs will be increasingly met by oil imports from sources in the Eastern hemisphere. These facts present the need for new deepwater facilities in the U. S. to receive the larger tankers presently in use in other parts of the world. The purpose of such deepwater facilities (superports*) is to achieve the benefits of the lower transportation costs for the consumer by utilizing the economies of the larger vessels.

The use of very large tankers is also advantageous environmentally. By utilizing the larger tankers, tanker traffic congestion and the frequency of oil handling will be minimized; consequently, potential for collisions and oil spills should be lessened. As these larger tankers will operate only in deepwater, potential groundings are greatly reduced. Studies have also been made into the need for deepwater ports for various dry bulk commodities.

The purpose of this study is to examine factors involved in the location of a superport in the northeast Gulf, namely the Mississippi-Alabama area.

In presenting our preliminary report for a superport to be located in the coastal area of Mississippi-Alabama, we have attempted to present the relevant facts which should be considered in selecting the site for the first superport on the U. S. Gulf Coast.

In general, we have covered the environment, air and water currents, land features, major consumer areas, major pipeline distribution systems, consumer interest, industrial development, and national security.

We have utilized current pipeline (Colonial) tariff rates on products delivered to the East Coast consumer from Mississippi-Alabama origins compared with a Texas origin and found a potential saving to the consumer of approximately $25 million per million barrels of products moved east.

In conclusion, taking all the data available into consideration such as the environmental, economic, consumer interest, transportation savings, national security, etc., a superport location off the coastline of Mississippi-Alabama appears to be the most desirable site for the Gulf area.

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*Superport and "deepwater port" for the purpose of this paper are considered to be synonymous.

PRELIMINARY RECOMMENDATIONS

1. A superport should be constructed in the northern Gulf.
2. The superport should be located in waters equal to or greater than 100 feet in depth.
3. The environment should be taken into consideration in determining the superport location.
4. To obtain maximum economic consideration to the consumer, the location best situated to give maximum saving in transportation cost should be given careful consideration.
5. National security should be taken into consideration in the selection of the site as should the effect this location will have upon the location of new refineries.
6. The superport construction should begin as soon as possible.

U. S. ENERGY OUTLOOK

During its past history, the United States has been blessed with abundant and low cost fuels. These energy sources have enabled the United States to develop the world's highest industrial output and the world's highest standard of living. The United States accounts for about one third of the world's energy consumption. Thus U. S. energy use per capita is the highest in the world. The U. S. gross national product per capita is also the world's highest. This relationship between energy consumption per capita and GNP per capita exists in all nations around the world with underdeveloped nations that have low energy consumption also having low GNP per capita.

It is an established fact that in the past few years U. S. domestic fuel supply has not grown as fast as demand for energy. During the next three to five years, all indications point to the fact that the ratio of domestic energy supply to demand will decrease rapidly.

During the decade of the 1960's rising U. S. demand was met in large part by using spare producing capacity to increase crude production. Additions to reserves did not keep pace with production. Today the U. S. has little spare producing capacity remaining and the reserves are continuing to decline. The U. S. must significantly increase imports of crude oil if it is to maintain its industrial growth and potential.

The Department of the Interior has estimated that total oil imports will reach 7.6 million barrels per day by 1975, 10.8 million by 1980 and 15.2 million by 1985.[1]

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[1] Environmental Impact Statement for the Trans-Alaska Pipeline.

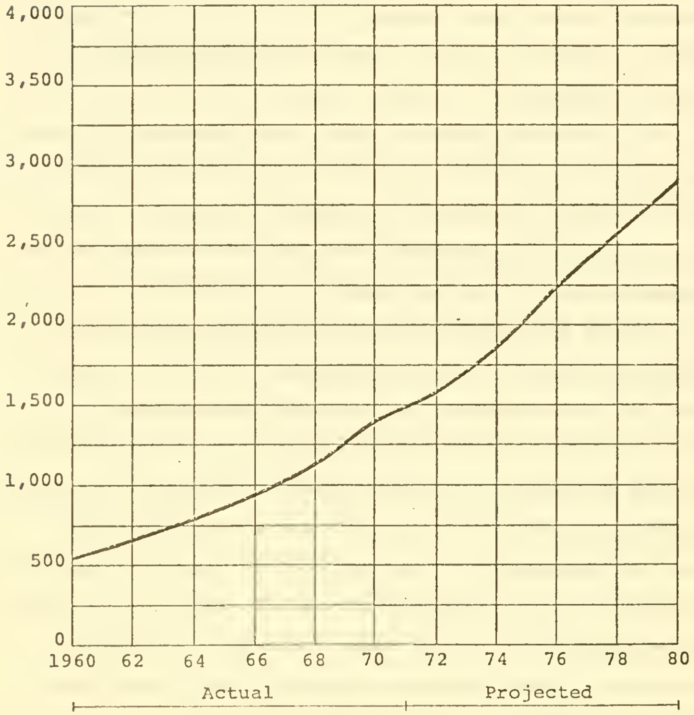
The major share of these added crude imports will probably be supplied from the Eastern hemisphere. The resulting long distance, high volume shipping adds a completely new dimension to crude oil logistics.

THE NEED FOR SUPERTANKERS AND SUPERPORTS

Crude oil transportation technology is changing rapidly. The current trend is toward larger tankers as evidenced by the fact that the average size of all crude oil tankers now on order is approaching 200,000 deadweight tons (DWT). About 220 tankers of 175,000 DWT or larger were in operation as of January 1, 1972, and another 334 were on order. Where complemented by modern terminal facilities (e.g., offshore monobuoys), these ships offer lower oil freight rates, reduced port congestion, and minimum oil handling. Figure 1 shows the growth in world transportation of oil from 1960 to present and the projected growth to 1980. In the past decade oil tonnage handled on the oceans has more than doubled and is expected to do so again in this decade.

At present, the average size of tankers coming into the U. S. ports is about 30,000 DWT. Existing Gulf or East Coast ports are not capable of accomodating the very large crude carriers (supertankers). Depths of approximately 100 feet are required by the largest vessels. The dredging cost, maintenance expense, and physical layout prohibit deepening and widening most channels to the degree required. Thus, new facilities, located at deepwater sites, designed to receive large cargoes of crude oil, are the logical solution to this accomodation problem. Figure 2 shows the growth in tanker size. Without this trend to larger tankers the congestion of ports and sea lanes around the world would have become a problem before now. Even though volume of world transportation of oil will continue its rapid growth the increasing size of vessels handling oil will result in little increase in the number of tankers in the world fleet.

GROWTH IN SEA TRANSPORT OF OIL
Millions of Tons Annually



Source: Actual figures from Marine Transport, 1971, Organization for Economic Cooperation and Development; other figures are industry projections.

Figure 1

GROWTH IN TANKER SIZE
Thousands of Deadweight Tons

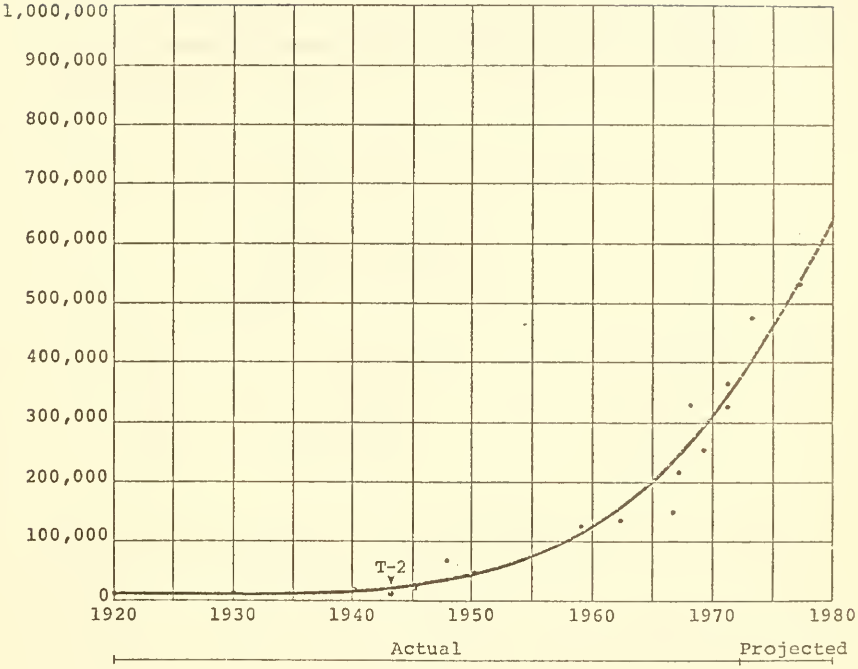


Figure 2

The larger tankers result in significantly lower cost per ton mile of transportation of crude oil especially over long distances. Most of the future U. S. oil imports will be from Middle East sources requiring a 24,000 mile round trip for tankers, therefore, significant cost savings can be realized through the use of supertankers and their required superports.

NEED FOR SUPERPORTS OFF THE GULF COAST

With the increase in oil imports and the economies inherent in supertankers and supporting superports, the U. S. must decide on locations for these ports. The Gulf of Mexico, with its geographical facilities serving the oil-hungry eastern and central U. S., is a logical location for a superport.

Estimates of crude oil imports through Gulf Coast superports are:

IMPORTS OF CRUDE OIL FOR
GULF COAST SUPERPORTS

Year	Barrels Per Day	Tons Per Year
1975	1,573,000	84,000,000
1980	4,175,000	224,000,000
1985	6,782,000	364,000,000

Such import volumes indicate that at least two offshore terminals could be justified even by 1975 and that three terminals would be a reasonable probability by the 1980's.

The northern Gulf of Mexico is a prime locale for construction of a deep-water port to serve the south, central and eastern United States. Favorable pipelines, barge, rail, and highway transportation facilities radiating from the seaports of the northern Gulf and availability of land and labor favor such a location. Physical factors such as barrier islands, fresh water outflow, favorable water currents and other factors make the area very attractive from an environmental standpoint.

TYPES OF DEEPWATER PORT FACILITIES

Offshore unloading facilities must allow maximum berth occupancy under prevailing weather conditions, fast turnaround time, and a reasonable investment and operating cost. They must be safe and environmentally sound with proven technology. Types of facilities possible for this application include artificial islands, fixed piers, and single-point mooring systems (monobuoys). There are variations of each type in use and each has advantages and disadvantages depending upon location. The monobuoy system appears the best initial facility for Gulf Coast locations.

A man-made island and breakwater would require many years to build and would cost about $500 million. The unprotected fixed berth platform system would also be more expensive than a monobuoy and would have less adaptability to varying weather conditions. Coversely, the monobuoy design allows the tanker to swing around the buoy with wind and current changes, providing a higher utilization factor for the Gulf area.

A typical single-point mooring system, as shown in Figure 3, consists of a large buoy which is anchored to the sea bottom by a system of mooring chains and anchors or submarine piling; floating hoses to connect the buoy with the tanker; and hoses that connect the buoy to a submarine pipeline. The monobuoy is equipped with battery-powered navigation lights, radar reflectors and fog horns.

Single point mooring systems are presently being used successfully in about 150 locations around the world. Operating history has proven such facilities to be reliable and environmentally sound.

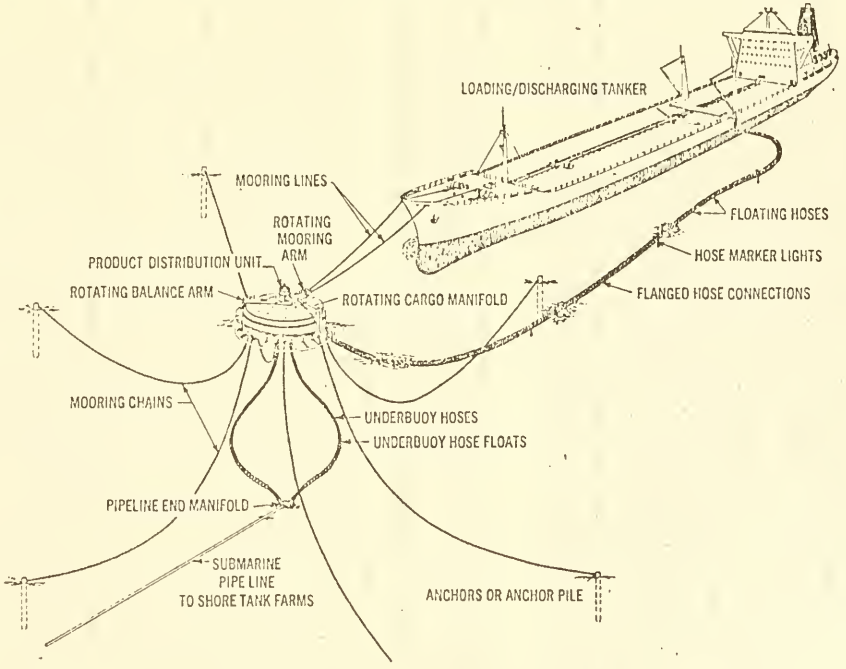

LOADING/DISCHARGING TANKER
MOORING LINES
ROTATING MOORING ARM
PRODUCT DISTRIBUTION UNIT
ROTATING BALANCE ARM
ROTATING CARGO MANIFOLD
FLOATING HOSES
HOSE MARKER LIGHTS
FLANGED HOSE CONNECTIONS
MOORING CHAINS
UNDERBUOY HOSES
UNDERBUOY HOSE FLOATS
PIPELINE END MANIFOLD
SUBMARINE PIPE LINE TO SHORE TANK FARMS
ANCHORS OR ANCHOR PILE

Figure 3

ONSHORE FACILITIES OF THE ALABAMA-MISSISSIPPI REGION

For a superport to be economically viable, there must be (1) large amounts of land available on shore from the superport; (2) transportation facilities to connect the superport with the distant sources of exports and the users of imports; and, (3) adequate support facilities for the day-to-day superport operations. Large quantities of land are required for tank farm areas to safely store enormous quantities of oil to be received from the superport and for refineries and other related industries.

There are adequate quantities of land which are immediately available, in the Alabama-Mississippi area, thus making unnecessary the expensive and environmentally harmful reclamation of shore areas which must be carried out in other areas.

There appear to be over 2 million acres immediately available and, of this area, thousands of acres have direct water access. Since Mobile, Pascagoula, Biloxi and Gulfport are already major international seaports, many much-needed superport support facilities are already available.

Special attention is called to the location advantage of the Mobile-Pascagoula area with respect to the grain and coal producing areas of the United States as compared to other seaports, and it should not be overlooked that this position will be further enhanced with the completion of the Tennessee-Tombigbee inland waterway system.

An abundance of ground water and surface water is available to sustain anticipated industrial, municipal and agricultural growth within the broad region that will be economically stimulated by the superport. At a minimum, several hundred millions of gallons per day (mgd) of additional ground water can be developed; probably at least one-half of this amount can be developed in coastal plain areas alone, where in most places as much as 0.5 to 1.0 mgd per well, or more, can be obtained.

Present utilization of water is only a small fraction of the combined average flow of the principal streams of Alabama-Mississippi alone. The quality of both ground and surface water is generally suitable for most industrial uses without treatment; however, in some localities ground water may require conventional methods of treatment for removal of iron or reduction of hardness. All large cities and many small communities in the area have public water systems which can be readily expanded to meet additional demands.

REGIONAL ECONOMIC IMPACT OF A SUPERPORT

The construction, maintenance and operation of a superport and its ancillary activities will have a significant economic impact upon the region of its location. Ancillary activities will include pipelines, tank farms, refineries, petro-chemical plants, increased transportation activity and other industrial development.

The major economic impacts will be associated with construction and operation. The impact associated with construction will be of immediate but short term duration. The impacts associated with the operations typically cover a broader economic base and provide benefits on an annual basis.

The economic impacts associated with a superport are generated by increased payrolls of new employees, outlays for purchases of materials and business services, and increased tax revenue. These impacts will have a multiplier effect in consumer purchases and business purchases. Most increases in consumer final demand purchases can be attributed to new payrolls.

New refinery capacity will gravitate to a superport location. The crude throughput of a superport of 150 million long tons per year by 1980 and 600 million long tons per year by 2000 can supply over twelve refineries of 250,000 barrels per day by 1980 and 48 refineries of the same size by 2000. Table 1 gives an indication of the economic impact that can be expected from the location of a single refinery of 250,000 barrels per day.

There are strong industrial linkages between the petroleum refining industry and other chemical industries, especially industrial organic and inorganic chemicals and agricultural chemicals. An East Gulf location of a superport, location of refinery capacity, and accessible inland waterways should attract a substantial number of chemical plants to the Alabama-Mississippi region. Although it was impossible to identify the magnitude of this develop-

Table 1. ESTIMATED IMPACT OF A 250,000 B/D REFINERY
(In millions of 1970 dollars)

Impact Factors	Construction Impact	Annual Impact From Operation	Total Impact of Refinery [10]
Project Cost[1]	$375		
Payroll [2]	84	$4.2	$168
Materials Purchases [3]	30		
Gross State Product [4]	155	15.0	455
Personal Income [5]	127	12.3	373
Retail Sales [6]	68	3.4	136
Service Trade Receipts [7]	9	.5	19
Bank Demand Deposits [8]	30	1.5	60
State and Local Taxes [9]	25	2.4	73

1. Project cost estimated at $1.5 million per 1,000 barrel/day capacity; issues of Oil and Gas Journal 1971-1972.

2. Ibid, Item 2, Table 2.
3. Ibid, Item 3, Table 2.
4. Ibid, Item 4, Table 2.
5. Ibid, Item 5, Table 2.
6. Ibid, Item 6, Table 2.
7. Ibid, Item 7, Table 2.
8. Ibid, Item 8, Table 2.
9. Ibid, Item 9, Table 2.
10. Includes impact from construction plus annual impact from operation times twenty (assumed life of plant).

ment, it will have the broadest base of all the impacts and could collectively provide the largest economic impact. Most of the industries associated with a superport are highly capital intensive. The employment generated by a superport and its secondary development will be low given the magnitude of the development. Employees associated with a superport and related developments, however, are highly paid, and this type of development should make a greater impact upon the Alabama-Mississippi regional economy than more labor intensive developments.

ENVIRONMENTAL IMPACT OF A DEEPWATER PORT IN THE EASTERN GULF

Under normal circumstances, a superport located well offshore in the north central Gulf of Mexico, other than immdeiately off the Mississippi River mouth, would have no appreciable detrimental effect on the environment.

A port close to the Mississippi River distributaries through the Delta would be extremely hazardous from a construction standpoint. The muddy bottom precludes proper foundations. The sporadic appearance of "mud lumps" and of dangerous mud slides entails great risk both of pipeline breakage and destruction of the port itself. Mud slides have destroyed offshore oil platforms in this area in the past.

Although a port off the North Central Gulf Coast would be considered environmentally safe under normal circumstances, in the event of some unforseen disaster which may result in oil spillage, a port location to the west of the Mississippi River Delta appears to be significantly less desirable than one located to the east of the Delta.

Ecological Significance of Estuaries

The northern Gulf estuaries are relatively shallow, muddy, nutrient rich areas bordered by extensive areas of salt marsh. They provide a nursery area for practically every commercially valuable species in the northern Gulf. Oil in these areas can only be detrimental to the biota. For these reasons, comparison of environmental factors of regions east and west of the delta must give priority to consideration to those factors enhancing protection of the estuaries.

Freshwater Input

A large amount of fresh water leaves the coastal plain via river systems between Mobile Bay and the Mississippi River. This water flows into the Gulf at the surface through passes between the barrier islands. Thus, there is a net offshore surface movement of water, which under most conditions would tend to retard or prevent oil reaching the estuaries in the event of an offshore spill. This retardation would result in more time to contain the spill and conduct skimming or other cleanup operations. There is comparatively little fresh water runoff west of the Delta, and its movement offshore is diffuse and thus less effective in resisting potential onshore movement of an oil film.

Water Currents

Data on offshore currents indicate movement of water east of the Mississippi River Delta is eastward and slightly to the south, thus a net movement away from shore. This is in part related to freshwater movements cited above. The dominant water movement west of the Delta is westward toward the Louisiana and Texas estuaries.

Barrier Islands

The coastline between Mobile Bay and the Mississippi River is guarded by barrier islands that form a physical obstruction against the movement of oil into estuaries and onto the mainland. Such islands are absent from the Mississippi River westward to Galveston. Thus the estuaries of the Louisiana coastline west of the Mississippi Delta are directly exposed to an onshore movement of oil.

Wind Shelter

The largest single factor influencing movement of an oil spill can be wind. In considering sites east of the Delta it should be noted that the prevailing southwest winds are obstructed by the Delta, whereas southwest wind blows directly onshore during a large portion of the year along the northern Gulf west of the Delta. This could have a bearing on the inshore movement of any spilled oil.

Sediment Influence on Spills

The large amount of sediment-laden freshwater flowing seaward out of the passes between the barrier island east of the Delta should afford more protection to the estuaries against oil spills than is the case west of the Delta where the estuaries do not discharge as great a volume of fresh water.

These suspended sediments in the fresh water outflow can cause the adsorption (or sorption) of oil on the supended detrital particles resulting in the sinking of large quantities of oil from the water surface. Kolpack (1971) showed this effect in the case of the Santa Barbara oil spill.

Seismic Risk

The U. S. Coast and Geodetic Survey has developed a seismic risk map of the United States. It should be noted that there are only three areas in the U. S. where no damage from earthquakes is expected and that east of the delta is a part of one of those areas. Therefore, the risk of damage to structures associated with the superport would be minimized if the port were located in this area.

Crustal Stability

A recent study of crustal stability conducted by the U. S. Coast and Geodetic Survey has shown that much of the United States' crust is moving relative to mean sea level. Some areas are rising while others are subsiding. Generally, these movements are very small, ranging from four one-hundredths of an inch (1 mm/yr.) to one-fifth of an inch per year (5 mm/yr.) and are measurable only by the use of very sensitive geodetic instruments. Some of the causes for these changes are widespread tectonic movements, earthquakes, excessive pumpage of gound water and the resulting lowering of the artesian pressure head, removal of oil and gas, mining, etc. Much of the subsidence along the western Gulf Coast is attributed to large-scale exploitation of natural resources such as oil, gas and water. Maximum subsidence of an much as 5 feet (1.5 m) in the past twenty years has occurred causing some structural damage to buildings and sewer lines.

At Eugene Island, Louisiana, tidal data indicates a subsidence rate of 10 mm/yr. New Orleans has experienced subsidence of a foot or more in some areas since 1947. Generally, the coastal area of eastern Texas and southern Louisiana are subsideng at a rate of 4 mm/yr. or more.

The area east of the Delta is ideally situated with respect to freedom from problems related to crustal instability. U. S. Coast and Geodetic Survey releveling of the first order level network in the eastern United States has shown this to be an area of near stability. The design problems involved in planning for a subsidence rate over the lifetime of a superport will be minimized and will result in less costs for construction in this area.

Specific Port Location

The only significant threat to the environment posed by a deepwater port is the effect on the biota of oil spilled from tankers or from the port. The location of the port well offshore in deep water greatly reduces the danger of large oil spills from collisions or groundings. Furthermore, a location far offshore allows a larger percentage of the more toxic volatile portions of any spilled oil to evaporate before reaching estuarine waters.

Offshore loading or unloading facilities for oil have been proven to be reliable and environmentally sound in about 150 locations around the world. The risk of pipeline breakage is much less than the risks involved in many smaller tankers bringing oil into the present ports.

Depth of Water

The logistics inherent in the safe berthing and discharge of liquid or other cargoes from superships dictate a minimum depth somewhat in excess of 100 feet surrounding the port.

Bottom Conditions

Offshore Alabama-Mississippi is geologically favorable for the construction of Ameraport. Bottom sediments over much of the shelf in water depths less than 150 feet are sand (greater than 90 percent sand size material) and muddy sand (50-90 percent sand size material and 10-50 percent silt and clay size material.) The sediments are probably less than 50 feet thick over most of the offshore Alabama. Westward these sediments thicken and become mud (greater than 90 percent clay and silt size material) and sandy mud (50-90 percent clay and silt size material and 10-50 percent sand size material). Underlying these sediments are the more compacted clay, silt and sand of Pleistocene age.

The sand and muddy sand of the Alabama-Mississippi shelf should provide very favorable foundation conditions for any type of future structure planned for the superport. This type of bottom generally possesses high shearing strength but scour resistance is generally low. Projection of subsurface lithologies, from wells drilled in nearby counties, indicate that foundation conditions should also be favorable in the units underlying the surfical sand and muddy sand.

Water depths in excess of 100 feet occur approximately 25 miles off the coast of Alabama-Mississippi. The shelf slopes seaward at about 3.2 feet per mile to depths in excess of 150 feet. Minor irregularities occur in water depths of 100 to 150 feet in the eastern part of the shelf. The western part has a more regular topography, with a northeast-southwest linear low occurring in water depths from about 100 feet to about 140 feet. This feature may represent the partially filled valley of the ancestral Alabama River.

Hydrography

In the interest of preserving the ecology of the offshore islands and coastal zone with regard to possible oil spills or other incidents considered harmful to the environment, location of the superport should be south of 29° 50'. This restriction on the location would allow sufficient time to execute an expedient oil cleanup in the event of a spill. Locating the port at this latitude and at approximately longitude 88° 15' W will place the port in the port in the most favorable position to take advantage of the high density water mass that travels in a cyclonic manner around the lighter water over the shelf due to the Mississippi River discharge. This entrainment by the prevailing current regime could keep the spilled oil offshore for a period of time, provided there were no adverse winds, allowing cleanup operations to be undertaken.

Winter would be the safest period in the event of a spill with the combination of favorable factors being the high rates of river discharge and offshore winds. The most unfavorable period would be during the summer and fall with low rates of river discharge and southerly winds.

ADVANTAGES OF A SUPERPORT IN THE EASTERN GULF AREA

The location of a superport in the Mississippi-Alabama area will be more economical for new refineries serving the Southeastern, Eastern and Midwestern states, recognizing that a more eastern location will reduce transportation costs to consumers.

The general movement of petroleum products along the Gulf Coast is in an eastward direction both by pipeline and by water. The Mississippi-Alabama location is 500 or more miles closer to the major consumer areas and is favorably located in respect to petroleum product pipelines and crude oil pipelines (See attached maps).

Petroleum Movements from Gulf Coast to the East Coast

(thousands of barrels per day)

	Actual	Estimated		
	1971	1975	1980	1985
By Water	1,915	2,000	2,209	2,291
By Pipeline	1,404	1,570	2,500	3,000
Total	3,319	3,570	4,769	5,291

Historically, as crude oil has become available, there has been a gradual eastward movement of refinery capacity along the Gulf Coast since World War II. In the past decade refinery capacity in the Eastern Louisiana and Mississippi area has expanded more rapidly than in Western Louisiana and Texas, principally due to new feedstock locations and nearness to the major consumer areas.

Currently more than half of the petroleum used by East Coast users comes from Gulf Coast refineries. The East Coastal states have been reluctant to allow new refineries to be built. The South Atlantic states would be economical locations for new refineries, but without deepwater ports, the location of refineries in these states is unlikely. The extensive shallow shelf from Cape Hatteras to Miami makes development of deepwater ports in that area doubtful. All facts point to the Gulf Coast continuing to supply a major portion of the East Coast market.

National interest in the basic problems of low personal income and underemployment of the chronically depressed areas in Mississippi-Alabama and surrounding states has long been evident. Massive investment of public funds through such programs as the Appalachian Regional Development Act, the Economic Development Act and others have not yet resulted in significant economic improvement relative to national averages. Location of core refineries within the region could provide the industrial base necessary for new industrial growth. A superport in the eastern Gulf area would markedly enhance the probability of new refineries locating in the region.

The development of refinery centers in Mississippi, Alabama, and neighboring states would lead to development of petrochemical plants and to their more labor intensive satellite facilities for plastics, fabrics and many other types of plants for consumer goods.

Greater geographic dispersion of refining and related facilities is highly desirable from a national security point of view as well. If a significant portion of the net new refining capacity required over the next several years is constructed in the existing centers, the risk of immobilization of unacceptably high percentages of the nation's industrial complex is minimized. The potential impact of natural or accidental man-made disasters, as well as that of any potential enemy military action, causing paralyzing disruptions to our total industrial complex should be given serious study. An east Gulf superport site enchances the dispersion of crude oil supply and storage capability as well as refining and related facilities.

The decline in availability of cheap natural gas is already causing a change in types of fuel for power generation in the South. In the next few years most additions to electric generating plants will use fuel oil, with nuclear fuel perhaps providing most growth in the 1980's. Refineries in Mississippi, Alabama and neighboring states would help provide lower fuel costs. Plants for the manufacture of synthetic natural gas in the Mississippi-Alabama area would be favorably located to serve existing gas transmission lines. (See attached map)

The location of a superport in the Mississippi-Alabama area would provide better nautical safety and reduced possibility of oil spills by avoiding the navigation of supertankers in areas with numerous oil and gas production platforms. It is estimated that by the late 1970's there will be as many as 15,000 wells drilled in the Gulf, 2,600 platforms, and 7,000 miles of underwater pipelines.

Better protection of the environment against possible oil spills is provided in the eastern Gulf area due to the protection provided by the offshore barrier islands, the outflow of fresh water, and the general wind and water current conditions.

SUPPLEMENT TO

ALABAMA-MISSISSIPPI SUPERPORT

(Preliminary Study)

Acknowledgements

This report was compiled by the Ameraport Council under the direction of Dr. Tal Bankston of Mississippi and Dr. John Moeller of Alabama. The bulk of the information contained herein was extracted from two reports, one prepared by the Marine Environmental Sciences Consortium (MESC) titled as this one, and the other prepared by Dr. Charles K. Eleuterius of the Gulf Coast Research Laboratory titled Hydrography of the East Louisiana - Mississippi - Alabama Continental Shelf. The MESC report was prepared by Dr. C. Everett Brett, Dr. George A. Rounsefell, Dr. Robert L. Shipp, Dr. Gary April, Dr. Stephen Stow and Dr. Bary Vittor.

In most cases the information was extracted verbatim from the referenced reports, with editing performed to integrate the two into one cohesive document.

THE ECOLOGICAL IMPACT OF A DEEPWATER PORT IN THE NORTHEASTERN GULF OF MEXICO

The impact of the proposed Deepwater Port on the environment and thus on the fauna of the area will depend to an extent on its location, on the area permanently lost, on the extent to which construction alters the surrounding environment, and on the extent to which petroleum or other deleterious products can be prevented from entering into the ecosystem.

The logistics inherent in the safe berthing and discharge of liquid or other cargoes from superships dictate a minimum depth somewhat in excess of 100 feet surrounding the port. We have assumed for purposes of discussion a depth of 20 fathoms (120 feet) as minimal. Because of the tendency for construction costs to rise geometrically as depth increases we also assume 20 fathoms to be the optimal depth.

The first step in our assessment of any possible damage has been to make an inventory of the fauna in the areas likely to be affected. Because of the limited time at our disposal we have endeavored to draw upon readily available sources of existing data, supplementing this with cruises to selected stations, concentrating especially on those along the 20-fathom contour.

The results of these studies of the existing fauna, qualitatively and quantitatively, of the characteristics of the bottom, and of overlying water masses, and their movements are embodied in the first section of this report.

Present Environmental Status of the Area

Evaluation of the Commercial Fisheries in the Area. In evaluating the fisheries we must keep in mind that effects can be of two kinds: (1) local damage from loss of local habitat, or conversely enhancement of the local habitat, depending on areas involved and type of construction; and (2) damage over a wider area from dispersion of petroleum or other deleterious products.

Therefore we need two answers: (1) the value of the fisheries for a unit of area at the depth of the proposed port; and (2) the value of the fisheries over a wider area that could be damaged by oil spills.

This first section utilizes data from several sources. For the shrimp fisheries, by far the most important economically, the shrimp landings by month, by species, and by 5-fathom depth zones over a 3-year period from 1969 through 1971 were furnished us by Mr. D. J. Bond of the Bayou La Batre office of the National Marine Fisheries Service of NOAA in the Department of Commerce.

The important fishery for small croakers, and other species for use in the petfood industry is well documented for this area by Roithmayr (1965).

The data on experimental hauls of various types of fishing gear in this area over a 23-year period from 1950 to April, 1972, were furnished by the Southeast Fisheries Center at Pascagoula, of the National Marine Fisheries Service of NOAA in the Department of Commerce.

The latest detailed statistics of all the total fishery landings are published in Statistical Digest No. 62, "Fishery Statistics of the United States, 1968," National Marine Fisheries Service.

The detailed tables on the shrimp catches between Mobile Bay and Mississippi Delta for both "inside" waters (behind the barrier islands) and by depth zone for the "outside" waters of the open Gulf appear in the Appendix.

The average catches of shrimp in the area (Mobile Bay, 88° west longitude, and the Mississippi Delta are given in Table 1.

It will be noted that the "inside" waters annually produced 7,700,000 pounds of shrimp worth $4,500,000, while the waters of the open Gulf accounted for an additional 11,600,000 pounds worth $10,700,000. In order to determine the catch per unit area in the vicinity of any deepwater port locations, we determined the square nautical miles between 5-fathom depth contours (Table 2).

The quantities of shrimp and their value per square nautical mile are shown in Table 3. The shift to greater values per pound with increasing depth is caused by a greater proportion of smaller (and younger) shrimp in the shallower waters. One nautical mile is 1.1516 statute miles so one square nautical mile contains 849 acres. The overall shrimp production in the open Gulf is therefore just under five pounds per acre with a dockside value of under $5.00.

The chief gear used in the experimental hauls was the otter trawl. Trawls used varied from 25 to over 100 feet in width, and towing time varied from 10 minutes to over two hours. By means of a nomograph all hauls were reduced to standard units of fishing effort consisting of a 30-minute haul by a trawl with a headrope 70 feet long. Towing at a 2-knot speed the net would cover one knot in 30 minutes. The 70-foot net would thus cover an area of 9.8 acres. This would be the figure for converting units of fishing effort into area covered.

A summary of the biomass per unit of fishing effort by depth zones and by 20 to 30 mile blocks (Figure 1) is given in Table 4.

The average standing crop (biomass) of fish and invertebrates was 381 pounds for 9.8 acres or 38.9 pounds of benthic fauna per acre (actually this is catch and the total percentage of the biomass actually taken by the net is somewhat conjectural). The biomass included all sizes of organisms and should not be confused with marketable catch.

The question arises as to whether the variations in the average biomass between depths or blocks is truly a significant and reliable difference. This doubt arises because these data cover several years and various seasons.

To test this we compared 34 paired tows (68 net hauls, with a net towed simultaneously on each side of the vessel) in each of two blocks (2 and 5) that were all made in April, 1972, between 18 and 22 fathoms. The average biomass in block 2 was 553 pounds; in block 5 it was 650 pounds. The test results are as follows:

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square
Total	135	205,480	1,522
Between pairs	67	156,787	2,340
Between blocks	1	3,240	3,241
Discrepance (error)	67	45,452	678

F = 3241/678 or 4.78 F = 3.99 for P of 0.02

So the difference between blocks is not statistically significant.

The petfood industry of the northern Gulf catches about 80,000,000 pounds annually of small croakers and other species, about 83% of which is canned as petfood. Over a 5-year period, 1959-1963, 60,536,000 pounds were caught east of the Mississippi Delta between the Delta and Perdido Bay. Of this total, 37,432,000 pounds were taken in 0 to 7 fathoms, leaving 23 million pounds caught in 8 to 30 fathoms. The area between 10 and 30 fms between Mobile Bay and the Delta is 1,566 square miles to which we should add half of the area between 5 and 10 fathoms for a total of 1,810 square nautical miles. By disregarding the very small portion taken in deeper water east of Mobile Bay we can conservatively estimate a yield of 12,707 pounds per square mile on these offshore grounds. At 849 acres per square nautical mile the yield is 15 pounds per acre.

The value to the fisherman is about two cents per pound. However the value to the industry is much higher. In 1962 Mississippi petfood processors took in $14.9 million from 48,000 tons of raw material, or a value of 6.4 cents per pound to the processor.

The fish taken by the petfood fleet consists of the following on the average:

Croaker	56%
Spot, sand, and silver trout	19
Cutlassfish	5
Sea catfish	2
Longspine porgy	2
All others	16

The most important of the miscellaneous species were striped and bay anchovies, the scaled sardine or razorbelly, butterfish, inshore lizardfish, and the southern kingfish or ground mullet.

The marine landings in the area, exclusive of shrimp and petfood, are given for certain years in Table 5. The eastern district of Louisiana includes both the eastern and western shores of Plaquemines Parish which are not separable in the statistics.

We can now make an estimated annual total for the area as follows:

	Pounds	Value
Shrimp	19,270,000	$15,230,000
Petfood fish	60,540,000	1,110,000
Menhaden	419,540,000	7,100,000
Oysters	11,770,000	3,760,000
Blue crabs	8,720,000	820,000
Snappers, Grouper, Jewfish	5,790,000	1,550,000
Croakers, fresh for food[1]	13,920,000	1,810,000
Other fishes	8,660,000	770,000
	548,210,000	$32,150,000

We can now make estimated answers to our two questions:

1. What is the value of the fisheries in the local area of the deepwater port?
2. What is the value of the fisheries of the area that can possibly be damaged by a major oil spill?

The answer to the second question is fisheries with an annual dockside value of $32 million.

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[1] Croakers, used fresh for food, increased 463% in volume in Alabama between 1968 (Table 5) and 1970, and this factor was used for remainder of area.

The answer to the first question is a trifle more difficult but we can make an estimate from our figures that appears to be reasonably sound:

Pounds and Values Per Acre of the Fisheries of the Vicinity of the Proposed Deepwater Port

Species	Pounds Per Acre	Value	Depth of Area (fathoms)
Shrimps	4.7	$4.35	0 - 50
Snappers, etc.	3.7	1.36	10 - 50
Large croakers	6.0	0.78	5 - 50
Petfood fish	15.0	0.30	8 - 30
Totals above	29.4	$6.79	
Total biomass	38.9		7 - 34

From the foregoing answers it becomes clear that a deepwater port on the continental shelf will not by its presence cause unreasonable damage to the fisheries. The major item of value, the shrimps, are estuarine dependent and the fact that a very small portion of the shelf is occupied will have no effect on the numbers annually emerging from the estuaries. The same might be said for the large croakers and for the petfood fish which are predominantly sciaenids.

In addition to the benthic shelf fauna there are certain pelagic fishes, such as tunas, spanish mackerels, thread herrings, and other clupeids which frequent the shelf and the water column over adjacent deeper waters. It is indeed difficult to argue that an artificial island or port will have an disruptive effect on such species.

A very large share of the fisheries of the area are prosecuted in the estuaries themselves, or in the immediately adjacent shoal waters. This will include oysters, blue crabs, menhaden, the larger share of the petfood fishes, and a fair share of the shrimp, especially the white shrimp.

Species of Benthic Invertebrates

The benthic invertebrate fauna in that portion of the Gulf of Mexico which would be affected by the proposed deepwater port have been sampled sporadically. The Appendix provides a species list compiled from Petersen grab and otter trawl bottom samples collected by the Gulf Coast Research Laboratory (Franks, et al, 1972). Included are three species of coelenterate, three species of polychaete worms, two gastropods, one bivalve, two stomatopods, 27 decapods, and six echinoderms. Of the animals obtained from these samples, the coelenterate *Renilla mulleri* was most abundant.

Some other species were obtained in the trawls, but are not included in the Appendix, as they are generally considered to be nektonic.

A series of Petersen grab samples were also obtained by MESC in October, 1972. Only one sample was obtained at each of seven stations; of these, the station 5 sample contained no live animals, and only a few shells and shell fragments. The results of this preliminary survey are summarized in the Appendix. These samples are inconclusive with respect to the characteristics of the benthic communities at the possible port sites. All stations have fauna associated with sandy mud or muddy bottoms, with the possible exception of station 6, which supports a mud bottom fauna. Identification of many species was made difficult because they were represented only by fragments or damaged individuals.

Fishes and Macroinvertebrates of the Area

In assessing the ecological impact of a deepwater port on the macrofauna it is necessary to consider the two ecological subgroups of the fauna, the pelagic and demersal. Any environmental change is likely to have strikingly different effects on these two subfaunal elements.

1. Pelagic fauna. Since no significant change of currents or water quality is anticipated by construction of a port well offshore in the northern Gulf of Mexico, such a port would appear to have no significant effect on pelagic fauna. Possible thigmotropic activity by some pelagic species toward the structure could result in concentration of desirable species and increase ecosystem stability by addition to habit diversity.
2. Benthic fauna. The influence on benthic fauna would be more significant than on pelagic fauna and its extent would depend in large part on the type of structure and on the extent of the area affected. This fauna is therefore discussed in more detail.

To determine potential impact of the port on the benthic fauna of the north central Gulf several localities were trawled to determine:

1. The dominant species occupying the potential port sites.
2. The total species composition, as completely as possible, on these sites.

The data obtained from these collections were supplemented with data obtained from the Gulf Coast Research Laboratory, as given by Franks, et al, (1972), and from Roithmayr (1965), in his analysis of the Industrial Bottomfish Fishery of the northern Gulf of Mexico. In addition data from collections off the coasts of Louisiana and Texas (Moore, et al, 1970) are used for comparative purposes.

A complete species list of all forms collected by us, with percentages of all finfish comprising more than 1% of the total finfish by weight, is included in the Appendix.

The five most abundant species by weight in the vicinity of the 20-fathom contour in the north central Gulf of Mexico as determined by various investigators are as follows:

Roithmayr (1955) - 8 to 30 fathoms

Micropogon undulatus	Croaker	58%
Leiostomus xanthurus	Spot	15%
Cynoscion arenarius and *C. nothus*	Seatrouts	5%
Stenotomus caprinus	Longspine porgy	5%
Arius felis	Sea catfish	1%

Franks, et al (1972) - various depths

Micropogon undulatus	Croaker	15%
Stenotomus caprinus	Longspine porgy	28%
Poronotus burti	Butterfish	7%
Leiostomus xanthurus	Spot	7%
Cynoscion arenarius	Sand seatrout	3%

Shipp (present study) - 18 to 22 fathoms

Stenotomus caprinus	Longspine porgy	42%
Lutjanus campechanus	Red snapper	13%
Diplectrum bivittatum	Dwarf sandperch	5%
Prionotus rubio	Blackfin searobin	5%
Synodus foetens	Inshore lizardfish	4%

Differences may reflect variation in time of year, gear fished, locality, percentages of capture at various depths, etc., but the general agreement leaves no doubt as to the dominance of certain species.

Only the red snapper among the dominant species listed is actively sought by sports fishermen. Because the snapper prefers a hard substrate, any offshore construction would likely increase its abundance. There exists no sports fishery offshore for the other dominant benthic forms. All species are harvested by the animal-food fishery.

The species collected from our stations included no rare or endangered forms.

The effect of the structure itself on demersal fauna that presently inhabits a deepwater port area, will probably be simply a loss of the area occupied by the structure. However, the overall population will likely be modified by the addition of a new fauna in the affected area adapted to hard, geometrically complex substrate. This may well generate a sports fishery.

Comparative evaluation of areas east of the Mississippi River Delta with those to the west regarding species composition of finfish fauna show minor differences. Moore, et al (1970), demonstrates species dominance from the Texas and Louisiana coasts to be similar to that reported above.

HYDROGRAPHY OF THE EAST LOUISIANA-MISSISSIPPI-ALABAMA CONTINENTAL SHELF AND ITS EFFECT ON ANY POSSIBLE SPILL

The currents and general circulation over the continental shelf off the states of Louisiana, Alabama, and Mississippi is attributable to four major factors: winds, offshore currents, river discharges, and, in the shallower areas, tidal currents. The considerable seasonal and diurnal variation in the magnitude of these four components prevents any particular one from being singled out as the dominant force. Any consideration of site location for an offshore facility should include a description of the area with regard to those physical and hydrological properties influencing any possible spill. An assessment of the circulation and environmental conditions in this northeast Gulf area must first be considered in terms of their relationship to the total Gulf circulation.

Interpretation of results from surveys prior to 1962 and certain cruises since shows the general circulation pattern for the Gulf of Mexico to consist of a clockwise Loop Current flowing into the Gulf through the Yucatan Strait and exiting through the Florida Strait. Large eddies that decay over periods of three to six months frequently form from the meanderings of the Loop Current and drift into the western Gulf. No significant semipermanent currents prevail in the western Gulf with the possible exception of a boundary current along the Texas coast.

Direct current measurements and attempts at delineating the seasonal variability of the Yucatan Current entering the Gulf indicate speeds up to 250 cm/sec in the core of the current during the spring and summer.

Cocrane (1963) reported that the Yucatan Current (Loop Current upon entering the Gulf of Mexico) extends on a near straight course to the NNE, sometimes almost reaching to the Mississippi Delta. A subsequent series of hydrographic cruises revealed that there was a northward progression of the Loop Current from the southeastern Gulf in mid-winter to the edge of the continental shelf off the Mississippi River Delta in August. This Loop Current dominates the eastern Gulf circulation.

The location and orientation of convergence lines determined from data collected by both aerial surveys and standard hydrographic cruises depict a northward flow south of the Mississippi Delta which diverges into east-northeast and northwest branches which exert a drag on the lighter waters from the Mississippi River passes. The resultant north-eastward semipermanent current is aligned with the bottom topography. The change in bathymetry contributes to a branching of the eastward component over the DeSoto Canyon south of Pensacola, Florida. The currents resulting from this bifurcation flow east and west producing an anticyclonic (clockwise) circulation aroung the less dense water east of the canyon and a cyclonic (counter-clockwise) circulation west of the canyon.

Differences in water density, a function of temperature, salinity and pressure, in a horizontal direction can exist only in the presence of currents. The general distribution of density is therefore closely related to the character of the currents. The major features of the surface circulation may be deduced from the spatial distribution of density shown in Figures 11 through 18.

Along most coastal areas where there is a significant amount of freshwater . influx into the sea due to land drainage, there is a general tendency for the freshwater to move offshore and the denser, more saline, water to move in underneath.

The river discharge influence in the Alabama-Mississippi portion of the northeast Gulf is in the creation of sloping pressure surfaces which result from changes in density and the hydraulic head. The momemtum of the discharges from South Pass and Pass a Loutre is dissipated by mixing seawater near the mouths of the passes and, thus, contributes little to the current speed at any distance from the river. The diversion of the river outflow into an easterly direction is related to the amount of river discharge, prevailing winds, and the semipermanent current aligned with the continental slope that exerts a drag on the lighter river water. The occurrence of this phenomena is apparent in Figures 11 through 18.

Little is known of the degree of influence the river discharges from the states of Alabama and Mississippi have upon the shelf circulation. It has, however, been substantiated through a recent three-year investigation that the discharge from the Pascagoula River rarely extends, unmixed, beyond the barrier islands twelve miles offshore.

The discharge rate of Pearl River which empties into Lake Borgne ranges from 1,200 CFS to almost 400,000 CFS. During the high discharge periods, the freshwater is detectable extending beyond the barrier islands.

The entire northern boundary of the study area is dotted with sources of freshwater discharges ranging from the Mississippi River on the western boundary to Mobile Bay on the eastern boundary.

The overall effect that these freshwater sources have on the circulation of surface waters in the study zone has been investigated by the Gulf Coast Research Laboratory for river systems along the Mississippi coast and are summarized in Figure 6. Low volumes of fresh water discharge are observed from about April to November (corresponding to low rainfall periods and maximum evaporation losses) with relatively high discharge rates noted from November to March.

Since these freshwater discharges are a source of resistance for surface water penetration in the near coastal zone (barrier islands) resulting from wind and tidal effects, they become critical parameters in the overall evaluation of possible site selections for superport facility. Further evidence of freshwater discharge resistance is shown by comparing the various levels of salinity in each of four zones illustrated in Figure 7. As these zones move progressively inland salinities are observed to decrease rapidly as shown. The influence of discharge rate on salinity is also clearly indicated in Figure 8.

Many of the gross features of the general ocean circulation, and some of its details, are directly related to the curl of the wind stress on the sea surface. Although the Gulf of Mexico is relatively small, and its current regime dominated primarily by the Loop Current, its surface circulation is in part a result of the wind stress.

A research effort for the Air Force Cambridge Research Center tabulated wind stress from wind velocity data for 2° latitude-longitude quadrangles based on ship observations for a 105-year period. Maps of average monthly wind stress for the Gulf of Mexico (Figures 19 and 20) may be easily compared with the average sea surface currents for the corresponding months (Figures 31 and 32).

Analysis of returns from approximately 15,000 ballasted surface drifters released over the shelf and south of the Mississippi River Delta indicated a predominately westward flow in the northwestern Gulf and a highly variable and complex circulation system in the northeastern Gulf (Figures 33 through 40).

Comparison of the spatial distribution of density with the corresponding surface drift data expresses remarkable agreement.

Localized Effect of Structure Itself

Types of Structure.

1. Effect of use on structure type. The type of structure will depend to some extent on whether it is to be for single or multipurpose use. Thus for liquid cargoes only, such as oil, the structure needs only to provide safe moorage and pumping facilities.
   If the structure is also to provide for handling and transfer of solid bulk cargoes the area and stability of the structure must be greater. Also the berthing facilities must be different to provide for cargo transfer and for a large number of smaller vessels or barges.

2. General description of structures, their advantages and disadvantages.

   a. Polder. The polder type of construction being considered for some airports can be dismissed as being suitable for ports only in depths too shallow for deep draft vessels.

   b. Dredged channel. The alternative to an offshore structure or mooring is a dredged channel. Such a channel along the gently sloping Gulf coast would require the removal of enormous quantities of spoil. The cost of dredging alone would fully equal the cost an offshore structure. Additional costs include frequent maintenance dredging, the disposition of great quantities of spoil, and the destruction and rebuilding of existing harbor facilities. In Mobile Bay, for example, a 1,000-foot channel (the minimum width for safe passage of two supertankers of 200-foot beam), with an 80-foot plus depth and a 1 to 10 shoulder slope would cut a swath 2,400 feet wide. Such a channel would have a tremendous ecological impact, and scarcely merits serious consideration. The risk of collision or damage of an oil-laden supertanker within the bay itself also militates strongly against such a solution.

   c. Mooring systems. Mooring systems differ from other transfer facilities in that the vessel does not come alongside a structure or a berth. The vessel in effect is merely moored to a floating buoy that is firmly anchored by taut mooring cables to enormous anchors embedded in the bottom. Such a system is suitable for liquid cargoes only. The mooring system consisting of one buoy is called a Single Point mooring or monobuoy. A cluster of several buoys may be used surrounding a small platform supporting the pumps for pumping the oil ashore through pipelines.

      The mooring system itself should have little impact on the environment. Many of these offshore mooring buoys are in use around the world and have been proven to be reliable and environmentally sound.

   d. Unloading platforms. An alternative to the moored buoy systems is the unloading platform, either moored or supported on concrete pilings. The vessels come alongside and pumps on the platform transfer the liquid cargo into the pipelines. These small unloading platforms are also single purpose. They have the disadvantage of lack of shelter for the vessels in heavy weather while alongside the platform. In Cook Inlet where both ice and extreme tidal range increase this difficulty platform legs of huge steel caissons and movable floating fenders between the vessel and the platform are used.

e. Seawalls. In this system a seawall is constructed, usually in the shape of the letter "C" with the opening in the lee. The inside wall is of steel sheet piling to maintain the necessary depth. The outer side can be of sheet piling also but may be of dredged material with slopes armored by heavy rubble. In its simplest form the seawall does not contain sufficient area for storage. It provides safe sheltered berthing which in itself should be an important safeguard against accidental spills. Furthermore, a boom system across the harbor entrance should provide good insurance for the containment of oil spills. The reef habitat furnished by the heavy rubble should be important in the smooth bottomed region of the Gulf and may be of greater benefit than the loss of area entailed by the structure.

f. Artificial islands, filled type. Since there may be economic reasons for a multipurpose facility, artificial islands must be considered on account of the need for larger areas. On such islands one could handle both liquid and dry bulk cargoes, possibly containerized cargoes for transfer to barges, and even a nuclear powerplant. The size and shape of such an island is largely an engineering problem. From an ecological standpoint it is important that risks of oil spillage be minimized, by sheltered berthing of tankers in areas where spilled oil can be contained, and by keeping the island in a sufficient depth of water to safeguard against navigational accidents. If a nuclear plant is installed there must be a sufficient volume of water exchange to dilute the thermal effluent.

The island will require a large amount of sand fill, which could disturb the substrate over an area much larger than the island itself.

g. Artificial islands, supported type. In the depth of water required for a deepwater port it may be as cheap or even cheaper not to use fill, but to support all or most of the island on prestressed concrete pilings. This system would have certain advantages; the island could all be in water of ample depth for deep draft vessels without any substantial increase in cost; without fill there would be no need for any significant disturbance of the substrate in the surrounding area; and the "island" would present minimum interference to the prevailing currents, facilitating quick dilution of any thermal effluent from a nuclear station. Disadvantages are the inherent risk of a nuclear plant not encased in ample fill, the cost of whatever devices are used to dampen wave action, and the increased cost of the much longer devices needed to contain oil spills.

Discussion of Structure Types and Their Environmental Impact. In the following list the chief advantages and disadvangates are summarized:

Advantages and Disadvantages of Various Types of Structures for a Deepwater Port

Type of Structure	Advantages	Disadvantages
1. Polder	-	Too expensive and too risky for deep water
2. Dredged channel	-	Disturbances in estuary, risks of large oil spillage
3. Mooring systems	Little physical impact on habitat	Liquid cargo only
4. Unloading platforms	As above	As above
5. Seawalls	Safe berthing, good oil spill containment, rubble slope for reef habitat	Area too small for multipurpose use
6. Artificial island, filled	Multipurpose use, safe berthing, oil spill containment	Need for fill will at least temporarily disturb a large bottom area
7. Artificial island, supported	Oil and dry bulk cargo, good water depth, little substrate disburbance	Safety of any nuclear installation, expensive to control oil spills, need for wave dampeners

Of the deepwater facilities listed we can dismiss number 1 as impractical (it is being considered seriously for airports in shoal areas).

The dredged channel would be enormously expensive, not only for dredging but in numerous other ways, such as maintenance, and great changes in existing berthing and handling facilities. This huge channel would have a major environmental impact. Huge vessels plying over the salt wedge would undoubtedly increase bay salinities. The area of the channel itself would remove considerable habitat. The disposal of the great amount of spoil would in itself ruin the bay unless it were transported by hopper dredge outside of the bay where it would again be deleterious if dumped on the continental shelf. This type of solution is not recommended.

Mooring systems and small unloading platforms entail minimum risk of oil spillage, and could be relatively quickly built and could be constructed at minimum cost.

For a single-purpose installation - liguid cargo handling - a C-shaped seawall would provide safe berthing and oil spill containment. It would require large amounts of construction material and would be costly.

For multipurpose use some form of artificial island is necessary to furnish sufficient area and to gain sufficient safety from high winds and hurricane tides. Whether the island is of a fill or supported type is an engineering problem, both have advantages and disadvantages.

Such artificial islands are extremely expensive.

Effect on the Fauna of Possible Oil Spills

The effect on the fauna of possible oil spills depends upon several factors:

1. The type of material spilled, which is related to the degree of refinement of the petroleum product involved. Thus a heavy kill of fish, worms, crustaceans and molluscs occurred rapidly in Buzzards Bay, Massachusetts, when a wrecked barge released 38,647 metric tons of a finished petroleum product #2 diesel fuel oil. The relatively high toxicity of diesel fuel compared to crude oil was again demonstrated in Baja, California when 8,000 metric tons of dark diesel was spilled at the mouth of a small cove causing an immediate and drastic kill of marine life.
2. The time elapsing between the time of the spill and its reaching the shore. Thus, crude oil spilled seven miles offshore at Santa Barbara remained at sea several days before arriving at the shore and was thus allowed to lose many of its toxic volatile components through evaporation prior to its arrival.
3. The type of cleanup methods used. When the Torrey Canyon ran aground 15 miles offshore of Cornwall, England, in 1967 it released 119,000 metric tons of Kuwait crude oil, half as much again as the Santa Barbara spill, but twice as far from shore. Although the slicks had some time to lose toxic volatile fractions, the cleanup operations involved extensive use of detergents, and dispersants (some were kerosene-based). These cleanup materials proved more toxic to marine organisms than crude oil. After the Santa Barbara spill no dispersants were used inside the one-mile limit

except when oil penetrated the Santa Barbara harbor. Beaches were cleaned by strewing chopped straw which was scooped into trucks and hauled away to be burned.

The Santa Barbara crude oil spill had no apparent effect on the abundant distribution of the important pelagic species of school fishes as shown by surveys of the channel by the California Department of Fish and Game made in the same manner as their routine sea surveys. They stated that there were no adverse effects on the anchovy, *Engraulis mordax*, as a result of the oil leak.

Whether the results of the Santa Barbara spill can be spplied generally is open to some question. The Santa Barbara crude oil has a high asphaltene component and is relatively insoluble in water. The aromatic fraction generally regarded as the most toxic is low. Since the oil tends to remain at the surface the volatile components are lost, reducing the potential toxicity.

4. A fourth factor that may be of considerable importance is the effect of freshwater outflow. Outflow of fresh water from the estuaries is likely to be a major factor in prevention of damage in the sheltered nursery areas lying shoreward of the barrier islands. This outflow can be important in two ways:

   a. The low salinity residual currents flowing out of the interisland passes will tend to hold any oil slicks offshore except perhaps under conditions of strong onshore winds that might create a surface current that would override the current caused by freshwater outflow.

   b. The suspended sediments in the freshwater outflow may cause the adsorption (or sorption) of oil on the suspended detrital particles resulting in the sinking of large quantities of oil from the water surface. Kolpack (1971) showed this effect in the case of the Santa Barbara oil spill, as shown in the following figure from his report.

   The northern Gulf estuaries are relatively shallow, muddy, nutrient rich areas, borded by extensive areas of salt marsh. They provide nursery area for practically every commercially valuable species sought after in the northern Gulf. The high particulate content of the estuarine waters may precipitate out many of the detrimental components of the oil.

An oil spill may affect the immediate local area and in some cases cause biologic changes which may persist for several years, but it does not cause permanent biologic damage. The repopulation of marine organisms in the affected area begins within one or two biologic cycles. This is documented by past spills.

A spill of more than 3,000 barrels of #2 fuel oil a finished petroleum product at West Falmouth, Massachusetts, in 1969 is known to have killed large numbers of marine organisms in the sublittoral zone, and the shellfish were believed unsuitable for harvesting or sale for many months. An independent study two years later observed a healthy biologic community present in the area.

The wreck of the Tampico Maru in 1957 spilling #2 fuel oil a finished petroleum product on the Baja, California coast caused heavy and immediate mortality to much of the fauna in the area. Although substantial recovery of marine life occurred within a year, some effects of the spill were evident several years later.

The widely publicized Santa Barbara crude oil spill of January, 1969, caused the death of sea birds and temporarily coated large stretches of adjacent beach. However later studies of the effect on marine life in the area revealed no permanent damage.

The crude oil spill from the Torrey Canyon likewise resulted in little or no persistent damage to marine organisms in England or France.

The severity of the biologic effects of a spill depends upon many variables. The degree of the immediate biologic effect is greater with some petroleum products than with crude oil. Other factors are also important. The amount of spilled oil, of course, is one of them. A lot of oil in a small area naturally is going to have more effect than the same amount of oil over a larger area. The physiography of the area will be important in determining the length of time the oil stays in the area and how widely it is dispersed. Season, weather conditions at the same time of the spill, other environmental stresses and the way the oil is cleaned up will all have some bearing on the degree of contact of the oil with marine organisms.

Environmental Comparison of Deepwater Port Sites East and West of the Mississippi River Delta

Under normal circumstances, the superport located anywhere along the 20-fathom contour in the east north central Gulf of Mexico would have no appreciable detrimental effect on the environment. However, such a port located off the coast to the west of the Mississippi River Delta, although considered environmentally safe under such normal circumstances, in the event of some unforeseen disaster which may result in oil spillage, appears to be significantly less desirable than a location to the east of the Delta. The factors responsible for these differences are discussed below.

1. Freshwater input. A large amount of freshwater leaves the coastal plain via river systems between Mobile Bay and the Mississippi River (see Appendix tables). This water flows into the Gulf at the surface through passes between the barrier islands. Thus there is a net offshore surface movement of water, which would retard or prevent oil reaching the estuaries in the event of an offshore spill. There is comparatively little freshwater runoff west of the Delta, and its movement offshore is diffuse and thus less effective in resisting potential onshore movement of an oil film.
2. Currents. Current data indicates that the mass movement of water east of the Mississippi River Delta appears to be eastward and slightly to the south, thus a new movement away from shore. This is in part related to freshwater movements cited above. The dominant water movement west of the Delta is westward toward the Louisiana and Texas estuaries.
3. Barrier islands. The coastline between Mobile Bay and the Mississippi River is guarded by barrier islands (see Figure 2), which form a physical obstruction against the movement of oil into estuaries and onto the mainland. Such islands are absent from the Mississippi River westward to Galveston. Thus the estuaries of the Louisiana coastline are directly exposed to an onshore movement of oil.
4. Wind shelter. Depending on speed and direction, the biggest single factor influencing movement of an oil spill may be wind. In considering sites east of the Delta it should be noted that the fetch of southwest winds is obstructed by the Delta, whereas the southwest wind blows directly onshore during a large portion of the year along the northern Gulf west of the Delta. This could be an important consideration in the safe berthing of large vessels, and have a bearing on the inshore movement of oil slicks.
5. Sediment influence on spills. The large amount of sediment-laden freshwater flowing seaward out of the passes between the barrier islands east of the Delta should afford more protection to the estuaries against oil spills (see Figure 3), than is the case west of the Delta where the estuaries do not discharge as great a volume of freshwater.

Summary

In the interest of preserving the ecology of the offshore islands and coastal zone with regard to possible oil spills or other incidents considered harmful to the environment, location of the superport is recommended south of 29° 50'. This restriction on the location would allow sufficient time to execute an expedient oil-cleanup in the event of a spill. Locating the port at this latitude and at approximately longitude 88° 15'W (no further west) will place the port in the most favorable position to take advantage of the high density water mass that travels in a cyclonic manner around the lighter water over the shelf due to the Mississippi River discharge. This entrainment by the prevailing current regime would tend to keep the spilled oil offshore for a period of time, provided there were no adverse winds, allowing cleanup operations to be undertaken.

Winter would be the safest period in the event of a spill with the combination of favorable factors being the high rates of river discharge and offshore winds. The most unfavorable period would be during the summer and fall with low rates of river discharge and southerly winds.

REFERENCES AND DATA SOURCES

Brahtz, J. S. (Ed). 1968. Ocean Engineering, John Wiley and Sons, New York.

Christmas, J. J. Data and figures from a forthcoming report on Mississippi estuaries. Gulf Coast Research Laboratory, Ocean Springs, Mississippi.

Cochrane, J. D. 1963. "Yucatan Current," in Unpublished report of the Department of Oceanography and Meteorology, A & M College of Texas. Reference 63-18A.

Cronin, Eugene (Coordinator), E. W. Fager, M. G. Gross, G. Gunter, D. Hood, D. W. Pritchard, and E. Salo. 1971. Preliminary analysis of the ecological aspects of deep port creation and superships operation. Department of the Army, Corps of Engineers, Institute for Water Resources, Report 71-10:31p.

Curray, J. R. 1960. Sediments and history of Holocene transgression, continental shelf, northwest Gulf of Mexico, In Recent Sediments, Northwest Gulf of Mexico; F. P. Shepard, et al, American Association Petroleum Geologists, Tulsa, Oklahoma, pp. 221-266.

Franks, J. S., J. Y. Christmas, W. L. Siler, Combs, R. Waller and C. Burns. 1972. A study of nektonic and benthic faunas of the shallow Gulf of Mexico off the State of Mississippi. Gulf Research Reports 4(1):1-148.

Green, T. 1967. The Waters of the Sea, D. Van Nostrand. London.

Kolpack, Ronald L. 1971. Biological and oceanographical survey of the Santa Barbara oil spill, 1969-1970. Vol. II, Physical, chemical and geological studies. Allan Hancock Foundation, University of Southern California, 477 p.

Moore, D., H. A. Brusher and L. Trent. 1970. Relative abundance, seasonal distribution, and species composition of demersal fishes off Louisiana and Texas. Contr. Marine Science Vol. 15:46-70.

National Marine Fisheries Service.
Data from D. J. Bond, Bayou La Batre statistical agent on shrimp landings by depth zones in the area.

Data from the Southwest Fisheries Center, Pascagoula, Mississippi, on experimental fishing results in the area from 1950 through 1972.

Nicholson, Nancy L., and Robert L. Cimberg. 1971. The Santa Barbara oil spills of 1969: A post-spill survey of the rocky intertidal. Chap. 17:325-400. In Biological and oceanographical survey of the Santa Barbara channel oil spill, 1969-1970. Vol. I, Biology and Bacteriology, Allan Hancock Foundation, University of Southern California.

Roithmayr, C. M. 1965. Industrial bottom fish fishery of the northern Gulf of Mexico, 1959-63. U. S. Fish and Wildlife Service Spec. Sci. Rept. - Fisheries No. 518, 23 p.

Rounsefell, George A. 1972. Ecological effects of offshore construction, Journal of Marine Science, Alabama, 2(1):208 p.

Sheets, H. E. and V. T. Boatwright, Jr. (Eds). 1970. Hydronautics, Academic Press, New York.

Straughan, Dale. 1971. Breeding and larval settlement of certain intertidal invertebrates in the Santa Barbara channel following pollution by oil. Chap. 10:223-244.

__________. 1971. Oil pollution and fisheries in the Santa Barbara channel. Chapter 11:245-254. In Biological and oceanographical survey of the Santa Barbara channel oil spill, 1969-1970. Vol. I, Biology and Bacteriology, Allan Hancock Foundation, University of Southern California.

U. S. Hydrographic Office, Charts 10, 690, 1-12, Washington, D. C.

Cronin, Eugene L., Director of the Natural Resources Institute. Preliminary Analysis of the Ecological Aspects of Deep Port Creation and Supership Operation. Alexandria, Virginia: U. S. Army Engineer Institute for Water Resources, 1971.

Drennan, Kirby L. Airborne Measurements of Infrared Sea Temperature in the Northern Gulf of Mexico. Ocean Springs, Mississippi: Gulf Coast Research Laboratory, Oceanography Section Technical Report, No. 2, December, 1966.

Drennan, Kirby L. Hydrographic Studies in the Northeast Gulf of Mexico. New Iberia, Louisiana: Gulf South Research Institute, Environmental Sciences and Engineering Laboratories, January, 1968.

Franceschini, Guy A. The Distribution of the Mean Monthly Wind Stress Over the Gulf of Mexico. College Station, Texas: Texas A & M Research Foundation, 1966.

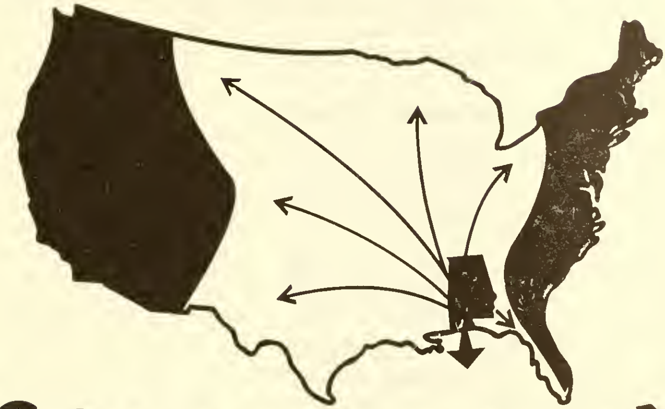
Gaul, R. D. and R. E. Boykin. Northeast Gulf of Mexico Hydrographic Survey Data Collected in 1963. College Station, Texas: Texas A & M University Department of Oceanography and Meteorology, October 30, 1964.

Gaul, R. D. and R. E. Boykin. Northeast Gulf of Mexico Hydrographic Survey Data Collected in 1964. College Station, Texas: Texas A & M University Department of Oceanography and Meteorology, March 30, 1965.

Gagliano, Sherwood M., John W. Day, Jr., and Jack R. Van Lopik. Environmental Aspects of Louisiana Deep Water Port Development. Dallas, Texas: American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., 1972.

Nowlin, Dr. Worth D., Jr. "Water Masses and General Circulation of the Gulf of Mexico," Oceanography International and Offshore Technology, Vol. VI., No. 2 (February, 1971), pp. 28-33.

AMERAPORT



CORPORATION

PROGRESS REPORT

JUNE 1, 1973

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AMERAPORT Corporation

Progress Report

June 1, 1972

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PREFACE

Alabamians have sought new sources of energy to help them develop this great State since the origin of our statehood. The energy needs of the State continue to grow at an ever increasing rate. The farmer, the fisherman, the businessman, and the housewife all have increased energy needs and common concerns. Many of them have shown their concern by supporting the AMERAPORT Corporation. To these Alabamians we say, "Thank you," and solicit their continued financial and moral support. To those Alabamians who have not yet shown their support, we ask them to join us in contributing to the economic improvement of our State.

The report that follows is a chronicle of past activities and a plan for future steps by the AMERAPORT Corporation. It is presented to provide you with a summary of where and how contributions were applied. It is also an indication of the stewardship entrusted to the officers and staff. We think you will find that much progress has been made and that the AMERAPORT Corporation has sought to perform in the best interests of all Alabamians.

While this report addresses a specific aspect of development, i.e., an off-shore oil terminal and associated refineries, this is only the beginning. As commerce expands, consideration will be given to expanding the terminal to handle other commodities.

We should also consider the petro-chemical and other related secondary industries that will develop as a result of the initial terminal. These industries will provide additional jobs and boost the economy statewide and in the AMERAPORT impact area.

The AMERAPORT is like a pebble thrown into a still pool. The ripples will impinge on every side.

L. W. "Red" Noonan
Chairman

INTRODUCTION

Recently, there has been considerable interest shown by several agencies and states in developing a Superport in the Gulf of Mexico. This interest is bolstered by the advent of operational supertankers and the prospects of vessels in excess of 450,000 dead weight tons. Ships of this size evolved out of the economies of large ship transportation for oil. The recent increase in the number of supertankers, both under construction and planned, comes from the developed world's increasing energy needs. An energy shortage has already been experienced in the United States, and is likely to become severe as the national per capita income and population increase. Estimates of energy consumption forecast the U. S. reserves of oil at nine years, gas at twelve years, and coal at six hundred years. The energy crisis points out the pressing need to import such energy resources as oil and natural gas to supplement our reserves.

The energy crisis is singularly significant for the Southeastern United States since this area is in the latter stages of transition from an agrarian to an industrial economy with rapidly accelerating energy demands. Coupled with energy needs is the nationwide demand for large quantities of bulk raw materials. The steady decline in U. S. resources suggests the need for bulk ore imports at an increasing pace to meet national needs. The projected requirements for increased energy resources and raw materials necessitate larger capacity vessels.

Ships of 250,000 to 500,000 dead weight tons cannot use existing shallow coastal ports without considerable dredging and relocation of natural and man-made obstacles with the concomitant environmental effects. It is generally agreed that U. S. ports cannot be dredged to depths necessary for super ships without severely affecting the environment. The economic aspects of protecting the environment in such an effort are staggering.

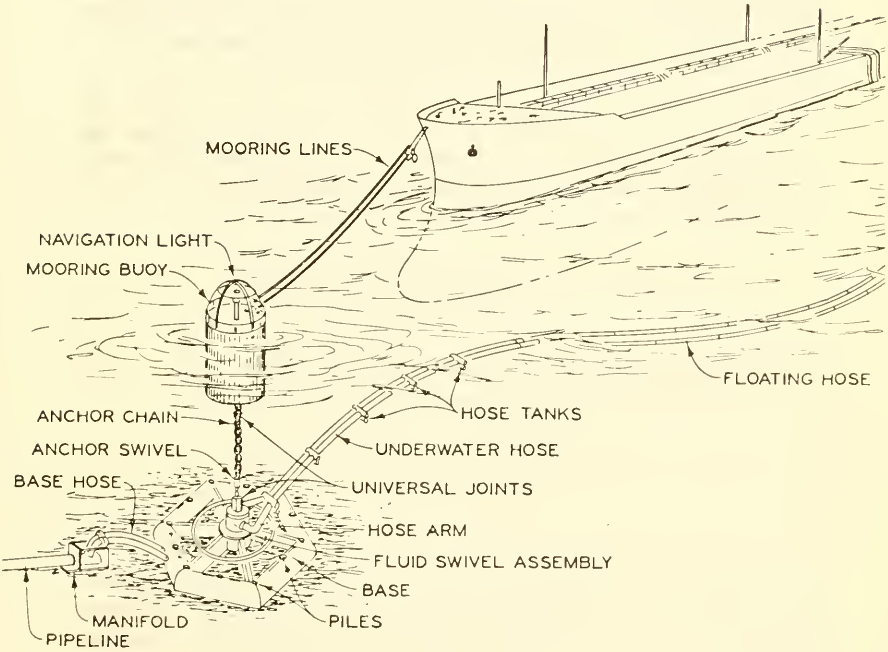
If the United States is to retain its current world industrial position, it will have to provide the facilities tc compete with countries that, by virtue of nature or by construction, have deep draft port facilities.

Future U. S. world trade will depend to a considerable degree on the development of the capability in the Gulf of Mexico to handle super vessels requiring berthing and channel depths, when fully loaded, of at least 110 feet. Without such a deep water facility, the U. S. will be unable to compete successfully in the world market.

An alternative offsetting the disadvantages of deepening current port facilities, is the Superport concept: the development of an off-shore facility in sufficient water depth to allow on-loading and off-loading of supertankers and bulk ore and commodity carriers. A Superport capability will take advantage of economies of scale, thereby reducing overall transportation costs and ultimately the cost to the consumer of various commodities. Such a port could vary in configuration from an off-shore monobuoy to an island type facility.

Initially the Superport would take the form of a single point mooring system or monobuoy. The monobuoy allows for varying weather conditions, such as wind and current changes, by allowing the tanker to swing around the buoy. The typical monobuoy consists of a large buoy which is anchored to the sea bottom, floating hoses to connect the supertanker with the buoy, and hoses to connect the buoy to a submarine pipeline which goes to the shore. The monobuoy is equipped with battery-powered navigation lights, radar reflectors and foghorns. Monobuoy systems are being used presently in about 150 locations around the world.

TYPICAL MONOBUOY



The Superport concept for the Gulf is one of regional and national scope having significant positive impact on the coastal and a multitude of interior states. An analysis of those factors which should determine the location for a Superport leads to the conclusion that the ideal site is best determined from the point of view of the greatest national utility.

It was with this conclusion in mind that AMERAPORT - not a local port, but a Superport to serve the Nation - was conceived. From the AMERAPORT concept came the AMERAPORT Corporation. It is the purpose of the AMERAPORT Corporation to express and support the view that an Eastern Gulf location off the Alabama-Mississippi coast best fulfills the AMERAPORT concept.

This was, and continues to be, a difficult task because an Eastern Gulf location was not given consideration in various agency studies until the emergence of the AMERAPORT Corporation. This is the case, even though considerable research toward locating a Superport in the Gulf of Mexico had been accomplished. The AMERAPORT Corporation also has provided a vehicle for a unified effort by Alabamaians from all parts of the State, north, south, east and west, to insure continued economic growth of the State.

AMERAPORT Corporation emerged in an almost mature and fast-changing environment. It had to adapt quickly. The purpose of this report is to chronicle the progress of that adaptation, present the current status of AMERAPORT Corporation's efforts and project what lies ahead.

OBJECTIVES

The economic well-being of the individual states is reflected in the prosperity of the Nation. AMERAPORT Corporation recognizes this relationship and has established its objectives accordingly. Primarily, its objective is to improve the economic well-being of the State of Alabama. Secondly, it seeks to increase the economic development of the Eastern Gulf tier states and the Tennessee-Tombigbee impact states. Thirdly, it seeks to relieve the energy 'crunch' of the Northeast. And finally, it seeks to provide alternatives to improve the future energy supply-demand situation of the Nation. The Corporation is convinced that improvement of the Alabama economy will contribute significantly to a financially healthy region and, in turn, a prospering Nation. Thus, the AMERAPORT Corporation has dedicated itself to these ends.

SCOPE

To be realistic, the AMERAPORT Corporation must of necessity limit the scope of its efforts. With this in mind the AMERAPORT Corporation has established the following initial scope of operations:

- Establishment of an off-shore deep water terminal for receiving supertankers in the Eastern Gulf of Mexico.
- Development of oil refineries in Alabama and the AMERAPORT impact states.
- Development of petro-chemical and other related secondary industries in Alabama and the AMERAPORT impact states.
- Provision of a new and viable petroleum supply for the Nation.

By limiting itself to attainable objectives with a well defined scope of operations, the AMERAPORT Corporation is assured of effectively and economically utilizing its resources. The AMERAPORT Corporation must continue to utilize its resources in this manner even though much has been accomplished; and, as the following pages will show, there is also much more to be done.

EVOLUTION

AMERAPORT Corporation came into existence long after similarly interested groups in other Gulf Coast states had completed much of their Superport related activity. In fact, these groups had progressed to the point of seeking federal agency approval of their plans and port locations. Burdened with this situation, the AMERAPORT Corporation set out to achieve its own objectives in a severely limited time frame.

The desire to build a Superport is one thing; to secure a permit to build it is quite another. The prerequisites seem almost impossible. Comprehensive social and economic studies must be made; port and refinery sites must be selected; on-shore and off-shore environmental impact research must be conducted; land availability and other land support potential must be inventoried; public hearings must be held; enabling legislation must be enacted; and finally, the permit to construct must be obtained from a federal agency.

The following is a month-by-month chronicle of AMERAPORT Corporation activity aimed at securing a permit to construct an Eastern Gulf Superport and related events:

1972

September	-	Off-shore environmental study initiated.
	-	Alabama Marine Environmental Sciences Consortium and Alabama Geological Survey conducted studies to determine the effect of a deep water port on the total environment. An off-shore port site was selected based on the findings of this study.
October	-	Phase One Study commissioned. Battelle Columbus Laboratory was placed under contract to accomplish the following: * Assess the economic impact of a deep water port on Alabama. * Assist AMERAPORT Corporation in contacting Federal Government agencies concerned with deep water port facilities to determine study direction AMERAPORT should take.

November - AMERAPORT COUNCIL FORMED. Alabama and Mississippi entered into a bi-state pact initiated by executive proclamation. The goal of this Council is to pool resources of the two states to obtain a Superport in the Eastern Gulf of Mexico.

December - Off-shore environmental report submitted to the Corps of Engineers. This preliminary report was required before the Alabama-Mississippi off-shore site could be considered for a deep water port. It discussed the need for such a port off the Gulf coast, the environmental and economic impact of the port in the Eastern Gulf and the advantages of a Superport in the Eastern Gulf area.

1973

January - Briefed the Alabama and Mississippi Congressional delegations; the result of which was the formation of the National Legislative AMERAPORT Task Force which will provide support at the national level. The members of this Task Force are:

ALABAMA

Senator John Sparkman
Representative Jack Edwards
Representative Bob Jones

MISSISSIPPI

Senator James O. Eastland
Representative Jamie L. Whitten
Representative Trent Lott

January - Phase Two Study initiated. Battelle Columbus Laboratory was tasked to accomplish the following:

* Assess Superport configurations.

* Identify facility needs.

* Conduct a comparative analysis of transportation costs.

* Assess social and economic impacts of configurations.

- Identify off-shore environmental impacts.

- Assess local, state and federal legal and regulatory requirements.

- Select operating entity and financing methods.

- Develop an implementation plan.

Organizations participating in the Phase Two Study are the:

Alabama Development Office

University of Alabama

University of South Alabama

Marine Environmental Sciences Consortium

Alabama Law Institute

Alabama Geological Survey

Alabama Department of Conservation and Natural Resources

South Alabama Regional Planning Commission

February - Mississippi legislature passed Senate Bill SB 2170, which ratified the executive proclamation establishing the bi-state AMERAPORT Council.

March - Briefed oil pipeline company representatives concerning the suitability of the Eastern Gulf for a deep water port and the advantages to be gained by locating refineries in the area. The companies and their representatives were:

AMOCO
  A. Rabinkoff, Chicago,
    Coordinator of Joint Interest
  R. H. Danielson, Atlanta,
    Regional Vice President
  W. Tom Jones, Montgomery, Distributor

SHELL
Allen Lacky, Houston, Attorney,
South Exploration & Production Region
Larry Durrett, Houston, Manager of
Deep Water Terminal Activities
R. N. Tucker, Houston, Manager,
Transportation and Distribution

TEXACO
K. J. McGee, New York, Assistant
Coordinator of Supply and Distribution

SUN TRANSPORT, INC.
George Larimer, Claymont, Delaware

TEXAS PIPELINE
H. H. Chandler, Houston, President

KERR-McGEE
H. C. Wynn, Houston, Operations Manager

PHILLIPS
W. A. Roberts, Oklahoma, Executive
Vice President

CITIES SERVICE
Jerry Burris, Industry Economist

MOBILE PIPELINE
E. P. Hardin, President

COLONIAL PIPELINE
Dean Smalley, Atlanta, Regional Manager

HUNT OIL
M. G. Langhorne, Dallas, Manager
of Marketing

STANDARD
Lamar Lund, Kentucky, Manager,
Standard of Kentucky

EXXON
R. C. Granberry, Louisiana, Manager of
Production, Southeast Division

GULF
J. Neal Miller, Atlanta, Regional Vice
President, Governmental Relations

ASHLAND
Lauren Hill, Kentucky, Budget and Cost
Coordinator

ARCO
Robert Howe, New York, Manager,
Transportation Projects

March - The Eastern Gulf location for a Superport was officially recognized by the Corps of Engineers and included in its studies. By this act, the Corps recognized the merits of the Alabama-Mississippi Superport site, as spelled out in the preliminary report submitted to the Corps in December.

April - Briefed those federal officials who have been assigned an area of responsibility for deep water terminals and/or have responsibilities concerning solutions to the energy crisis.

- President Nixon's energy message, among other things, encouraged investment in domestic refineries and requested the Congress to pass enabling legislation to permit construction of deep water terminals.

May - Participated in the National Petroleum Council meeting. This was the first time the bi-state AMERAPORT Council was represented and the NPC verified the AMERAPORT Council's conclusions regarding the location of a deep water port in the Eastern Gulf. Also, NPC's projection of industry need foresees the requirement for the construction of at least sixty-one 'grass roots' refineries.

- Received an invitation to participate with SEADOCK (the Texas Superport Group) and LOOP (the Louisiana Superport group) in a meeting sponsored by the Offshore Terminal Committee of the American Petroleum Institute.

- Testified at the public hearings and provided inputs to Corps of Engineers Gulf Area Terminal Hearings. The highlights of these hearings were:

    * From a transportation through-put cost standpoint that a three location complex the Gulf of Mexico is the most economical.

    * That a two location complex is more economical than a one or four.

  - * That, in each one of these findings, the Mobile-Pascagoula site was included in the most favorable alternatives.

- Governor Dunn of Tennessee, by proclamation, appointed a member of his staff to the AMERAPORT Council and had read into the record of the May 24th hearings a statement which, in summary, stated that the State of Tennessee and the Southeastern Region of the U. S. will be better served by the AMERAPORT location.

- Invited to participate in a seminar conducted by the Office of Oceanography, U. S. Navy, together with all other off-shore terminal proponents.

From this brief presentation of past activities, it can be seen that the AMERAPORT concept has been recognized and that there is interest at the regional and national levels. The intensity of activity in May is indicative of the degree of that interest. Background information continues to be prepared in anticipation of the various other hearings, meetings and seminars.

BENEFITS

In examining the economic benefit of constructing and operating an oil refinery in Alabama, it is useful to employ the value added concept. Value added is that amount of money added to a product by the process it undergoes. For instance, if a refinery buys a barrel of crude oil for $3.80, refines it, and sells it for $4.80, the value added to that barrel of oil by the refining process is $1.00. This dollar is then allocated to labor, profits, taxes, etc. Of course, the total value of the barrel of oil is $4.80; however, the refinery's contribution to Gross State Product is the value added of $1.00. The important thing to remember about value added is that, in this discussion, it is the amount of money available for distribution to the people of Alabama.

The construction time for a refinery which has a 225,000 barrels per day processing capacity is approximately two years. Industry sources indicate that this size refinery is the most feasible and is what they plan to construct. This type refinery was used as a basis for computing the estimated figures displayed on the following charts.

VALUE ADDED BY CONSTRUCTION
of a 225,000 bbls/day
Capacity Refinery
(Dollar figures are in millions of
1973 dollars over a two-year period)

	Refinery Construction	Secondary Impact of Construction	Value Added Total
ALLOCATION			
Wages	$ 104.0	$ 24.0	$ 128.0
Taxes	4.0	0.2	4.2
Profits	19.0	4.0	23.0
Other	10.0	10.0	20.0
TOTAL VALUE ADDED	$ 137.0	$ 38.2	$ 175.2
JOBS CREATED	5,228	1,622	6,850

The chart shows that construction will produce a total value added of $175,200,000, which is available in different forms to Alabamians over the two year period. For instance, $128,000,000 in the form of wages will be paid to the construction crews, and $4,260,000 will be paid to local and state governments in the form of taxes. The total value of the construction, which includes all facilities, such as access roads, fences, etc., is estimated to be $400,000,000.

The economic benefits gained by the operation of a refinery differ from those of construction in that construction produces a one-time increase, while operation provides a recurring benefit over the useful life of the refinery. For illustration, the following chart shows the result of operations over a twenty-year period.

VALUE ADDED BY OPERATION
of a 225,000 bbls/day
Capacity Refinery
(Dollar figures are in millions of 1973 dollars)

	Yearly Refinery Operation	Secondary Impact of Operation	One Year Total	Twenty Year Total
ALLOCATION				
Wages	$ 10	$ 3	$ 13	$ 260
Taxes	2	2	4	80
Profits	30	2	32	640
Other	43	18	61	1,220
TOTAL VALUE ADDED	$ 85	$ 25	$ 110	$ 2,200
JOBS CREATED	625	379	1004	N/A

These estimates show that operation will produce an annual total value added of $110,000,000. Again, as in construction, these amounts will be available in different forms to the people of Alabama. In twenty years the refinery will have contributed over two billion dollars to Gross State Product. The total annual value of the products produced is $394,200,000.

Continued analysis will take many forms and will cover numerous factors, but the pertinent information has already been developed. In the two-year construction period and twenty years of operation one 225,000 bbls/day refinery will make available an estimated $2,375,200,000 to Alabamians.

These contributions will significantly improve the economic well-being of Alabama and the AMERAPORT impact states, which as the reader will recall are the first objectives of the AMERAPORT Corporation.

FUTURE

AMERAPORT Corporation will continue to pursue its objectives; and, to do so, it is essential that petroleum and chemical companies be attracted to Alabama. The initial program to persuade these companies to locate in the State began in March, 1973, and will be intensified, throughout the remainder of the year. There are other known activities which must be undertaken, and they are catalogued below:

June	Complete draft enabling legislation and introduce into the Alabama legislature.
	The major tasks of the Phase Two Study will be completed and utilized in developing an application for a license to construct a Superport.
July through October	Appear before Congressional committees and provide inputs. Prepare and submit federal permit application for an Eastern Gulf Superport.

Other significant activities will be added as they arise.

CONCLUSION

After a belated start, the AMERAPORT concept has grown to the stages where it is now recognized as a viable concept, offering advantages not found elsewhere.

Preliminary research has been completed and Phase Two Studies are nearing completion. These studies point out that the economic impact of the AMERAPORT will be far greater than this report could indicate. A realistic analysis of the petroleum industry's stated requirements and the through-put capacity of the AMERAPORT, reveals the potential for at least five new refineries. By referring back to the construction and operation figures in this report, the reader can readily see that five refineries will make available almost 12 billion dollars to Alabama and the AMERAPORT impact states.

Future plans of the AMERAPORT Corporation include the filing of an application for a federal permit to construct an off-shore oil terminal in the Eastern Gulf. This is the first step in the actual implementation of the concept.

It is the consensus of the Board of Directors of the AMERAPORT Corporation that the activities enumerated in this report demonstrate conclusively that the AMERAPORT states are in an excellent position to obtain a Superport.

Mr. MOELLER. Thank you.

I would at this moment, then, merely like to summarize the efforts and the objectives of the more detailed studies that Ameraport has undertaken, because we recognize that the development of a major offshore port facility in the vicinity of Alabama and Mississippi has received increasing attention since the formation of the Ameraport Corp.

Such a major port development facility in the east gulf region would have considerable impact on the social and economic structure of the particular States involved, as well as the southeast region as a whole.

The primary activities of such a port would be the importation and distribution of oil from foreign sources that will be provided to the growing market in the southeast, as well as transported overland to larger markets in oil short States east of the Mississippi River.

Most accepted projections for the year 2000 show that there is a clear demand for energy that must be met through imported petroleum.

It is expected that considerable secondary development would accompany such a major facility, including the development of petroleum refineries, petrochemicals, and other related industries that would be linked to the port development.

The Ameraport Corp. was formed in 1972 to determine the feasibility of a major offshore port facility in the vicinity of the Mississippi and Alabama coastlines.

The corporation sponsored the development of a phase 1 project to look into the most recent documentation of the needs and feasibility of deepwater port development proposed for the coastlines of the United States.

Phase 2 was a more in-depth analysis of the feasibility and a determination of the type of superport most compatible with specific sites along the Alabama coastline.

Without getting into all of the details and technical matters, Madam Chairman, I would like to merely indicate that in keeping with the spirit and intent of the bill now before this committee that we have anticipated the needs and demands for detailed scientific research both for the offshore and the onshore elements, including a secondary environmental impact which sometimes is identified as socioeconomic.

We have a detailed methodology which was prepared by us by the Battelle-Columbus Laboratories. We have considered both the ecology and the aesthetics that go along with any development.

We have anticipated the expected environmental impacts in five different locations which might be attractive sites for refineries, petrochemical siting.

We have broken each one of them down and have considered alternatives. These will be made available to your committee.

We have also considered the sensitive environmental aspects. We have had eminent marine biologists look into the prospects of rare and endangered species, and we have anticipated the proper legislation which would enable a protection of the coastal zone and, at the same time, provide for reasonable economic and industrial development in an area which is in great need of industrial development.

I will not trouble the committee with the legal aspects. I have had the opportunity to discuss this with counsel from time to time, and I do appreciate the opportunity of being here.

I will be available for questions.

The CHAIRMAN. Thank you, Doctor.

In looking over your statement and study, it has touched on all points that have to be considered. It is a good statement.

Now, before we start questioning, we will hear Brig. Gen. James U. Cross, Texas Offshore Terminal Commission, representing the State of Texas.

STATEMENT OF BRIG. GEN. JAMES U. CROSS, USAF, RETIRED, EXECUTIVE DIRECTOR, TEXAS OFFSHORE TERMINAL COMMISSION, STATE OF TEXAS

General CROSS. Thank you, Madam Chairman.

I deliver this statement not only on behalf of the Texas Offshore Terminal Commission but on behalf of Governor Briscoe.

I would like to thank the other members of the committee for giving us the opportunity to appear and make this statement.

Now, I have turned this over to the committee, to your counsel, but I will have a change or two that I should like to include at this time, simply because the statement was prepared as relating to the House of Representatives bill 7501. And I, of course, realize you are considering different bills, H.R. 5091 and H.R. 5898.

Madam Chairman, I will make those changes in my remarks.

In recognition of the critical shortage of oil apparently facing our country, the Texas Legislature created the Texas Offshore Terminal Commission to study the need for deep draft harbors or offshore terminals on the Texas gulf coast.

Inherent in this charter is the responsibility to monitor and recommend Federal legislation when and as it impacts on the interests of the State of Texas.

In that regard, Texas is concerned that Federal law has already, to some extent, and increasingly will become more fragmented, thus making obtainment of permits and/or licenses to utilize public lands and/or international waters to build facilities such as a deepwater terminal, haphazard and uncertain.

This fragmentation may lead to facilities which are not well planned, which do not make adequate protection for the environment, and in the construction of which, vital interests affecting the State of Texas and its citizens may be overlooked.

Even worse, such procedures could result in "overkill' to the extent that no solution to the problem could ever be found.

In this connection, our commission, on May 25, 1973, passed a general resolution expressing the desire that simplified procedures for obtaining permission to construct deepwater terminals be established. A copy of that resolution is attached to this statement.

I have previously submitted that to your counsel, Madam Chairman.

While our studies have shown a clear need for some type of deepwater facilities, those studies have also shown that to construct and operate them will require thorough planning and coordination among Federal, State, and local agencies.

Several pieces of Federal legislation have been proposed that would authorize or impact on the issuance of permits for construction of deepwater terminal facilities, and it is Texas' view that any such enabling legislation should include the following provisions before passage.

1. Federal legislation should reserve to the State off whose coast the proposed facility is to be built, the right to decide where it is to be built, whether it is to be publicly or privately owned, and whether the State itself should construct the facility.

This provision is necessary, we feel, to enable the State to adequately protect the interests of all its citizens in view of the potentially enormous environmental and economic impact of the proposed facilities.

A second provision, and one equally critical, we feel, is that simplified procedures for the issuance of permits must be incorporated into the legislation. I have with me today a chart, but did not include it, but I will, showing the steps necessary for obtaining a work permit from the Corps of Engineers under the Rivers and Harbors Act.

There are 21 agencies and six other groups shown on the chart, and many of the steps indicated may have to be done several times before obtaining final approval.

With the apparent critical shortage of crude oil in the United States, such delaying procedures could hold up development of a deepwater port facility indefinitely.

Accordingly, to avoid such delays, legislation authorizing permits for such facilities must contain specific provisions to require precise and expeditious handling of applications by a single Federal agency. And that agency should be given the necessary muscle to insist that expeditious handling be accorded each application by all agencies involved in the permitting/licensing process. We would not take exception to what agency that licensing process should fall under. We would like to see it under one single agency with some muscle.

Attached to this statement are several proposed changes to H.R. 7501 which, we think, is a basically good bill. Should these changes be incorporated, the bill would accomplish the dual aims of maintaining State control over any facilities to be built off the State's coast while, at the same time, Federal authority concentrated in a single agency would be accomplished.

While this statement is not intended as a complete endorsement of this particular bill, H.R. 7501, it would, if modified by the attached changes, more correctly establish responsibility and authority for deepwater terminals in the appropriate places.

Now, I have those changes attached to my statement, Madam Chairman. I would be glad to read them or just turn them over to counsel.

The Chairman. I think it should be made part of the record so we can study this.

[The material referred to follows:]

Add: Sec. 103(e). The Secretary shall obtain the approval of the state agency designated by the governing authority in the absence of the Governor, of the state off whose coasts the facility is proposed to be located. No facility shall be licensed without such approval.

Change: Sec. 104 (c). An application filed with the Secretary for a license under this Act shall constitute an application for all Federal authorizations required for construction and operation of a deepwater port facility. The Secretary shall consult with other agencies to insure that the applications contain all information required by the agencies. The Secretary will forward a copy of the application to those Federal agencies with jurisdiction over any of the construction and operation and will not issue a license under this Act until he has been notified by such agencies that the application meets the requirements of the law which they administer. *If such notification is not received by the Secretary within six months of forwarding the application to any agency, such failure to notify shall be deemed approval of the application by each such agency.* Hearings held pursuant to this Act shall be consolidated insofar as practicable with hearings held by other agencies.

Add: Sec. 105 (g). The Secretary shall promulgate rules and regulations required under this section in such a manner that the time required for a decision to grant or deny a license shall not exceed one year.

CHANGE: Sec. 107(1) CONDITIONS IN LICENSES—The Secretary is authorized to include in any license granted under this Act any conditions he deems necessary to carry out the purposes of this Act. Such conditions may include but need not be limited to:

(1) Such fixed fee as the Secretary may prescribe to assure that only those applicants who are financially responsible, are permitted to license and operate a deepwater port facility, *except that no costs or fees shall be charged if the applicant is a state or political subdivision of a state.*

Change. Sec. 112 Facilities connected to a deepwater port facility licensed under this Act such as pipelines and cables, which extend above or into submerged lands or waters subject to the jurisdiction of any state or possession of the United States, when in such waters shall be subject to all applicable laws or regulations of such state or possession to the extent not inconsistent with Federal law or regulation. Nothing in this Act shall be construed as precluding a state from imposing, within its jurisdiction, *more stringent environmental, safety or other regulations of whatever kind.*

The CHAIRMAN. I would like to say to you, General, that I thoroughly agree with you. We must avoid fragmentation of authority. And for that reason, before we ever started these hearings, I brought into consultation the Chairman of the Public Works Committee and the Chairman of the Interior Committee and their staffs, so that we could talk over what the areas of jurisdiction were and so that we could agree to come up with legislation which will designate one agency with the authority for the licensing so that it is not fragmented.

We find even in the committees here in the Congress, this jurisdiction spread over, and it is confusing. And we want to try to avoid this because I think all of us recognize it is imperative that we get something done and done quickly to bring this possibility into being on the deepwater ports.

I think we will just put this in the record, General, so we can study it later.

General CROSS. Thank you. That will be fine.

The CHAIRMAN. You have presented some very good papers, all of you gentlemen, for study. I just have a few questions that I would like to ask before I turn it over to Mr. Clark. I am going to have to be excused in a few minutes, and he will carry on.

But we are terribly concerned. It is very difficult to get the answers, and I think we have had more difficulty in getting the answers out of the administration people, because they are just not sure what is going to happen. We have had more real information from people right in the industry who know the need and who have come up with some very good suggestions and recommendations.

Dr. Moeller, you were talking about offshore ports proposed for Louisiana, Alabama, Mississippi, and Texas. And all of these are within the Gulf area.

Now, my understanding is that the superport should be built somewhere about 20 to 25 miles offshore.

My real question is, with all of these superports being built within that area, supposing we were able to have enough of the large tankers of at least 250,000 deadweight tons, would that cause much traffic or confusion of traffic within that small Gulf area?

Mr. Moeller. No, ma'am, it is really not that small of an area.

The Eastern Gulf, sometimes known as the Mid Gulf, the Port of Mobile-Pascagoula is, in a sense, separated from the Louisiana-Texas side by that indenture of land that comes around, and we are talking in the neighborhood of one to two ships a day. And I believe in Texas they are talking about somewhere around three to four ships a day, is that right, General?

General Cross. When it reaches its full capacity.

The Chairman. If we can get all these big tankers.

Mr. Moeller. Yes, ma'am, but there would be a minimum of congestion in traffic much less than there is at the present time.

The Chairman. Even at the present time?

Well, of course, it is going to take several years for all of this to happen, the same way it will take several years for the larger tankers to be built. And, in the meantime, we are using the smaller tankers which are more costly and requiring many more ships than if we can build the larger tonnage tankers.

General Cross. Yes, ma'am.

And one point I might make there. In using the smaller tankers in the larger numbers, of course, your potential for accidents naturally is much greater.

The Chairman. That is right.

Senator Noonan. Madam Chairman, I might add at this point that projections indicate that by 1985 we will be importing up to about 15 million barrels of oil daily.

It is our understanding it is anticipated that about 11 million barrels of oil daily will move through the gulf area, and with this prospect in mind, it would tend to concentrate if we had only the single mooring cluster, but at one location it would concentrate and raise the probability of mishap also.

The Chairman. I can understand that. I think it was you, Dr. Moeller, that mentioned about the cost figure of oil being delivered to New Jersey from the State of Louisiana and from these other places.

Mr. Moeller. Yes, ma'am, we both have the figures.

The Chairman. If you both did, were you citing those costs to mean that with one of them, you mentioned it would amount to one-half cent a gallon to go from, we will say, the gulf up to the New Jersey coast.

Now, does that mean then that the gulf coast could do the supplying from these offshore ports without really great added costs to deliver it up to the east coast?

Senator NOONAN. This is the point we were attempting to make, yes, Madam Chairman.

The CHAIRMAN. I wanted to be certain that is what you meant.

Senator NOONAN. We have a breakdown of the various throughput costs in offshore to onshore for the supertankers, the tank farms, the pipelines, the refineries, and the product lines to PAD 1.

The CHAIRMAN. Mr. Morris, did you have a comment?

Mr. ECKHARDT. Madam Chairman, on that point may I get a clarification?

The CHAIRMAN. Yes.

Mr. ECKHARDT. I understand those costs, or the cost of shipment by water from the offshore point in the gulf to a point in New Jersey. They do not include the cost of moving the material to the offshore port, do they?

Senator NOONAN. Yes; it is the total cost, is it not, John, from the Middle East?

Mr. ECKHARDT. From the Middle East?

Mr. MOELLER. Congressman, if I may be so bold as to give you the breakdown, this was based on several models that were developed by the Battelle-Columbus Laboratories for us and utilizing VLCC's from the Middle East, and the voyage into the eastern gulf into the Louisiana area and into the Texas areas, we found that an average cost of moving a barrel of crude from the Middle East to these gulf tier States would be $1.90, $1.91, and $1.92 a barrel, respectively.

To this was added a port charge or a terminal charge of 8 cents a barrel to the shore for handling, and then, to that, there was 11 cents in Texas because they have a little farther to go in their projections, and then, to this was added an additional 1 cent to 2 cents for distribution of the crude to the refineries, assuming the refineries to be located in their present positions or areas in Texas and Louisiana, and new grass root refinery construction in the Alabama-Mississippi area.

Then the current product oil lines from the gulf tier area to the east coast are presently operating at capacity or near capacity.

In order to effectively transport the finished product from these areas to the major market areas, a new pipeline would have to be constructed.

The cost of the pipeline has been amortized in the basic cost figures, and the figure of 37 cents per barrel from the Alabama-Mississippi area, 41 cents a barrel from the Louisiana area, and 44 cents a barrel from the Texas area were developed, using these factors.

This anticipates amortization of a new pipeline. This, then, is what we might say is the raw cost.

We used a weighted average of approximately 50 percent of the product moving via pipeline, approximately 45 percent of the finished product moving via conventional sized tankers, using Philadelphia as a terminus, using Linden, N.J., as a terminus at the pipeline.

These are the raw costs we came up with.

Now, there are costs from the New Jersey, Philadelphia area that would have to be considered. Assuming this would be approximately 15 cents a barrel, we then come up with a net differential of 20 cents a barrel, using a conventional 42-gallon barrel approximately one-half cent.

These are approximations.

One of the purposes of this type of comparison, of course, is to indicate that there is no great magnitude in increased costs by virtue of the location of additional grass roots refineries in Alabama-Mississippi area, or the increase in production in refineries in the Texas-Louisiana area.

Mr. ECKHARDT. Thank you.

Mr. RUPPE. Madam Chairman, may I interpose a question?

The CHAIRMAN. May I just ask one more question, and then I have to go.

Mr. Morris, you mentioned about the veto power of the State, especially Delaware.

Should a superport be built some 20 to 25 miles offshore from your own State, do you feel the State should still have the right to veto such a plan?

Mr. MORRIS. Yes, we do, because I think it could have a terrific effect on our small State.

We are a very small State, as you know, and the resort business in that area is, I think, half of Washington appears there every weekend.

The CHAIRMAN. Would the harm that would be done to the State possibly be the need for the refinery if the pipeline would come from the offshore port some 20 miles away?

It would have to come somewhere within your coastal area.

Mr. MORRIS. It would have to go through our State in all probability.

Truthfully, I am going to be very frank with you, I do not know how to answer that.

The CHAIRMAN. I was going to ask you another question about whether or not it could be controlled through your own State laws.

Mr. MORRIS. It can be controlled through our own State laws.

The CHAIRMAN. Frankly, I do not know where the pipeline should go or whether you should have a refinery right at the shoreline, but my whole thought—and this is why I asked Dr. Moeller about this figure showing that there was no need to put any superports up on the East Coast—it seems like the East Coast all the way through is going to oppose any kind of superport. And I recognize the need for our resort areas because, after all, we have to have some access for recreational purposes on our shores.

Do we locate all these offshore ports down in the lower part of our country, in waters of the Southland?

Mr. MORRIS. With the shortage of energy these days, this is only my thought, but I mean things can change and change fast. And this is not the Governor's view, I want to be sure that is not the

Governor's statement, but things could probably change somewhat, but we would sure want good police power over anything that is done, I would say. And this is on my own I am saying this, and please do not quote the Governor on this, because he will get on me.

The CHAIRMAN. I think we have to think of this.

Here is the whole East Coast with its great need for energy. Do all of our other States have to put with the problems of progress in order to deliver the energy that is needed all along the East Coast?

I do not know the answer to this. We are just trying to figure out what the solution should be.

Mr. MORRIS. As you know, things can change, and I happen to be Chairman of the Energy Commission for our State at the moment. And, very frankly, we are in a quandary.

We are hoping up there that you folks over here will give us a hand and give us the real facts on this matter before too long because we are holding up on the little things we can do.

But, when you have companies moving from one part of the United States to the other, and leaving 20 and 30 dealers without gas and fuel oil, it is quite a serious situation.

If you can do anything to give us a hand on that, we would appreciate it.

The CHAIRMAN. Sometimes I wonder if the dramatics that are going on right now showing us all that is going to happen if we cannot get gasoline and fuel oil for heating and gas for driving, what is going to happen in this country?

It has us all in a dither, and we have to find an answer.

Thank you for your testimony.

Now, I am going to turn this over to Mr. Clark as I have to be excused.

Mr. CLARK [presiding]. Mr. Ruppe?

Mr. RUPPE. Thank you very much, Mr. Chairman.

Dr. Moeller, you mentioned that the cost of bringing the oil from the Gulf Coast to the Mid-Atlantic States is about 1 cent a gallon.

Mr. MOELLER. In that range.

Mr. RUPPE. Did you get oil company assistance or Petroleum Council assistance in developing these figures?

Mr. MOELLER. Yes, we did.

Mr. RUPPE. I would like to ask the staff whether the oil companies themselves had ever testified on this subject, or will they testify in this regard?

Is anything scheduled?

I just want to make the observation. I am sure nothing is scheduled, and I am fascinated that they always use third parties to come in here and develop their costs. They never testify, and I know they are not going to testify on this bill.

There will be a consortium, or a State, or a pipeline or the jobbers will come in from Michigan. The companies never testify if the cost is right, and I have no reason to doubt it, but there is no one we can pin down.

I am always reminded of that because I remember another committee having oil import quota hearings, and all the people testified we have no oil shortage and we will have none if we keep the oil import quota. Things are going to be good, but the oil companies never testified there.

The jobbers testified, the pipelines testified, the States testified, but they never went on record.

So we had no commitment when things changed.

I hope the gentleman from Delaware is well advised that without a very strong statement from the oil companies, these figures are not something you can bank on. I trust you are prepared to pay a good deal more for your oil in the future.

Mr. MOELLER. Congressman, can I add one comment?

The oil companies were not our single source of data on this.

We employed the Battelle-Columbus Laboratories, and they built a model, and these are basic figures.

Mr. RUPPE. I have no question about your statement, and I do not critize it or the way you arrived at it.

I am only pointing out that I would guess that the oil companies themselves would be in the best position to say what it would cost, and they should come in and make a statement.

I am just pointing out the fact that Standard Oil is not about to come in here and make any statement on any record that can be held against them, or that they can be held to 5 years hence.

I would like to ask the gentleman from Delaware if he is prepared to pay a good deal more than 1 cent a gallon for the development of an offshore point.

Mr. MORRIS. The energy crisis has a bearing on this. We have had six of the major oil companies in to testify in the last 2 weeks. And it seems to be a stereograph thing.

I do not think the testimony has deviated very much, very little either that way. But when you get to certain questions, such as you have just asked, there is always a hedge in saying, well, we are not sure about this. Is it the price of crude that is running, the price is up, and is there a real shortage of oil?

You do not get an answer. They say we are allotting oil. We are allotting so much oil to the State, to our dealers in the States, but beyond that it has not been too satisfactory.

I do wish that you could get them in here.

Mr. RUPPE. I would like to ask you one more serious question. If we have this legislation, should we provide that the States can exclude this type of development if they so choose?

What if all the States did it, not only the States on the Atlantic Seaboard, but all States as well?

Do you not think in the final analysis we have to have something in the bill that will trigger a Federal determination, that will mandate an extremity, that is, the construction of this type of offshore facility?

Otherwise, if all the States felt like Delaware, and adopted your position, where would we go?

You are banking on the fact that some States may have an interest.

Mr. MORRIS. I think the last statement I made to the chairman before she left, time changes many things, and so do circumstances.

We did not realize when this statement was made that we were going to have such an oil shortage as we are having now.

Now, the ecologists, I am wondering if the ecologists are going to change somewhat, or are we going to ruin all of the country by not being able to get the proper oil, both heating oil and gasoline?

Frankly, I am a little bit frustrated, and I wish if this committee felt that they could get more information from the companies, that they would look to hear from them.

We would profit by it. We cannot get it from them. I have done everything I can.

Mr. RUPPE. Maybe I will turn that question over to my friend from Texas later on.

Mr. ECKHARDT. Would you yield?

Mr. RUPPE. Yes.

Mr. ECKHARDT. I might comment the oil companies are preserving their deniability.

Mr. RUPPE. It takes a good lawyer to know a good lawyer's position.

Mr. MORRIS. Conditions could change and we might be compelled to consider, or they may come up with some foolproof superport that we feel is not foolproof at the present time.

But, on the other hand, what they are doing is lightering right off of our shores. All they need to do is break one hose. That hose is 8 to 10 inches in diameter, and for 10 minutes that oil hits the water, where do we go?

Mr. RUPPE. If you have this type of thing, you might get rid of the lightering proposition.

Mr. MORRIS. This is what I am saying personally, but do not accuse my Governor of saying it.

Mr. CLARK. Would the gentleman yield?

Mr. RUPPE. Yes.

Mr. CLARK. I would like to answer the gentleman's question about the oil industry appearing here.

The American Petroleum Institute has been invited to appear later on. Single industries will not appear.

Mr. RUPPE. I would like to ask the witness from Texas, if Texas or any other State was to control or own this offshore facility, would that mean that they would lease it in turn to a private operator or consortium?

Second, does it mean they might take a fee on the oil that would come through this State-licensed facility?

And, third, would they in any way control the distribution or the final terminus point of this petroleum product?

General CROSS. I believe, Mr. Ruppe, I can answer the last portion of your question by saying no, categorically, that it would not be Texas' intent that it be controlled, I assume you mean by the other States or the other need areas.

Mr. RUPPE. They would retain no control over distribution?

General CROSS. No, sir, I would not envision that at all, but there occur first two questions, I believe, that it might be premature to say how the State of Texas would control that thing, if it were in public ownership for example.

We have not answered all the legal questions yet as to whether or not we could build such a facility, say, with revenue bonds or with general obligation bonds.

We could not build them under current law with general obligation bonds simply because we would have to go to the voters to get that authority, and that would be sometime down the road.

We have kind of eliminated that position simply because it would take too long. We feel like there is a need for these kind of facilities right now.

Essentially, that is about the best answer I can give to you at this time.

Our position would be that we would like to have the latitude in the bills that are now before the Congress to retain some State control over it, should the State wish to retain that control at a later time, a relicensing perhaps.

But we have not made any firm determination on that at this point.

Mr. Ruppe. Mr. Chairman, that is all at the moment.

Mr. Clark. Mr. Eckhardt?

Mr. Eckhardt. I am very much concerned about the question of how a port would be controlled, whether the port is established by private capital and operated as a private institution as far as ownership is concerned, or whether it is a State institution, or whether it is a Federal corporation.

It seems to me that there should be some concept of requiring that it operate as a public utility or in the same manner as a common carrier, that it be available for all on equal terms.

I would like to have your comment on that, General.

General Cross. I question it should be that way. It should be a common carrier, and the reason we have presented our statement at this time in the context that we have is, as we examine these questions in the months ahead as to how the thing, No. 1, should be financed, what are the legal implications we want to retain some maneuvering room really to establish just such things as you have mentioned, Mr. Eckhardt.

Mr. Eckhardt. I am rather troubled about a tendency to permit the single utilization by single companies or groups of companies of what should ordinarily constitute public facilities.

I give you as an example the grain elevator owned by the Houston Ship Channel Port Authority, which has been leased to a single company, and I think under a recent court order it has been permitted to be used as, in effect, a common carrier by all of those who desire to be served.

As you know, there could be a tendency, it seems to me, if these authorities were not regulated by Federal law in this respect to let them fall into the hands of a certain consortium of oil companies or shipping interests.

Do you not feel that there is some danger in that area?

General Cross. I do not believe so, Mr. Eckhardt, because that is the reason we are asking for the authority that we are asking for now, so that as we develop a position for the State in the ensuing months here, that we can try to accommodate the Federal requirements, the States' needs, and the private requirements, but without letting it reside in the hands of private interests.

Mr. Eckhardt. Well, I am suggesting that perhaps one of the Federal requirements should be the requirement that the port be a public facility, rather than one which might be governed by its owner with respect to service.

General Cross. We could not object to that, and I do not believe at this point we would.

Mr. Eckhardt. What would be your comment on this, Mr. Noonan?

Senator Noonan. Our view at this point in time would be that independent units would fund the offshore deepwater port facility. The license would be granted through a permit from the governmental body issuing the permit, that the State would retain all the regulatory, the supervisory and audit control of the offshore facility, but the operation and the maintenance would be that in private ownership.

Mr. Eckhardt. Yes, but what I am suggesting is that should there not be some requirement as a condition of a Federal permit that the facility, which, of course, is somewhat in a monopoly position, and in a very important area of commerce, be one which serves all proper comers similar to a common carrier?

Senator Noonan. That is right. We are in total agreement.

Mr. Eckhardt. You would have no objection with respect to the Federal Act imposing that requirement?

Senator Noonan. We totally agree with that.

Mr. Moeller. All of our efforts are directed in this manner.

Mr. Morris. If I might ask, do you mean the Federal Government should build this and should control it?

Mr. Eckhardt. No, sir, I am not suggesting that.

As a matter of fact, I am not even getting into the question of who should own or finance the project, but rather how it should be used once it is established.

It seems to me that a minimum requirement should be that however it is owned or financed, it should be available on something like the same basis as a common carrier, and I think we are all in agreement on that problem, are we not?

Mr. Morris. Yes, sir.

Mr. Moeller. Yes, we agree.

Senator Noonan. Certainly.

General Cross. Yes, sir.

Mr. Eckhardt. The other thing that I would like to get into briefly is the question that was raised, I think, both by Mr. Morris' testimony and by General Cross', and I find a little bit of interplay that might be at cross purposes.

You are indicating, General Cross, that there should be something like a one-stop situation with respect to authority to build the port, and conditions under which the port would be built.

General Cross. At the Federal level?

Mr. Eckhardt. Yes, and I suppose you are trying to meet the kind of circumstances, the kind of problem that exists, for instance, in drilling for gas.

I give you an example that I think you know about.

George Mitchell has large gas holdings under Galveston Island. When his company desires to tap those sources he could not drill on land, because the city of Galveston had zoning ordinances against it.

He then goes to the Corps of Engineers, I believe, for a permit to drill at sea. The choice of whether it should be at land or at sea is not in any agency. That has already been precluded by the local agency.

The drilling, I think, has to be at sea. This may be good or it may be bad.

I think your suggestion that some single authority should make these determinations rather than a number of overlapping authorities is correct.

Have I interpreted your remarks correctly, General Cross?

General Cross. What I would propose there is that it be, for want of a better word, I will call it a superauthority. They would control the portion of the application, or they would submit to other agencies the portion of the application that that particular agency had interest in, but that super agency would have enough muscle and power to compel the other agency to act one way or the other at an early time so that we could get these permits and get the facilities built, rather than find ourselves in a predicament like we are with respect to the Alaska Pipeline.

Mr. Eckhardt. And we have, I think, a comparable situation in the question of powerplant siting.

Several Federal agencies have a concern there, the Atomic Energy Commission, EPA, State water and air pollution agencies.

General Cross. Yes, sir.

Mr. Eckhardt. City councils, et cetera.

General Cross. Yes, sir.

Mr. Eckhardt. And you are suggesting that there be something in this case, some unified authority that could make a decision, taking into account all of the concerns, is that correct?

General Cross. Yes, sir.

Mr. Eckhardt. Well, now, does this not sort of run counter Mr. Noonan, to some of the suggestions that you are making about your veto power of any State whose shores might be affected, and I assume that in New England it could be as many as four States.

Senator Noonan. That is Mr. Morris' area.

Mr. Morris. Well, we take the position, sir, that the States should have the veto power. There is no question that a pipeline is going to have to go through Delaware if they are off Big Stone Beach.

Now, there is no way of getting from that area, unless you are going underwater an awful long distance to get into Pennsylvania, and we should be able to decide whether or not and when we want that facility to go through there.

Mr. Eckhardt. Well, I think we may be anticipating difficulties which possibly would not exist in New England.

I certainly do agree with you wholeheartedly on the proposition that the mere argument of raw progress should not decide the issue.

I think you are absolutely right in what you say here about mere population growth is not desirable for a community.

I understand that to be what you are saying.

Mr. MORRIS. Yes.

Mr. ECKHARDT. And I think perhaps with a considerable opposition to offshore ports in a good part of New England the conflict may not exist.

If we are called upon to draft a piece of legislation, or other committees of Congress, I would hate to see that legislation permit a kind of vulcanizing of interstate commerce with respect to the location of these offshore ports.

Mr. MORRIS. I see what you mean.

Mr. ECKHARDT. Thank you.

Thank you, Mr. Chairman.

Mr. DE LA GARZA [presiding]. Mr. Cohen?

Mr. COHEN. Thank you, Mr. Chairman.

Mr. Morris, I assume this is the Governor's statement, and not yours?

Mr. MORRIS. Yes, sir.

Mr. COHEN. It seems to be carefully worded, particularly on page 10 you talk about the oil operation now taking place in the Lower Delaware Bay.

Mr. MORRIS. Yes, sir; that is the lightering operation.

Mr. COHEN. And you say no major oil spills have occurred which are directly attributable to that operation, correct?

Mr. MORRIS. Yes.

Mr. COHEN. And the question is raised in my mind, are you suggesting, or is the Governor suggesting that minor oil spills have been indirectly attributable to the oil companies operation?

Mr. MORRIS. I think we have had some minor spills in there.

I happen to have a place on Delaware Bay, and I know at times we have had an oil slick come in. It could have been bilge of a boat, or it could have been a slight spill, but we have not had any major spills at all, sir, so far, and we are very lucky that we have not.

If you would go out and watch them lightering in the bay, taking that oil from one ship to a barge, you would wonder how they prevent it.

Mr. COHEN. I assume that the minor spills have not had any detrimental effect upon the marine life.

Mr. MORRIS. What was that?

Mr. COHEN. The minor spills, as such, have not had a significant impact upon your environment with the marine life there.

Mr. MORRIS. Several years ago, I understand, they thought that the oyster's life was somewhat affected. This year it sure must not have been any spills, because there is plenty of fish, I can tell you that.

Mr. COHEN. But in spite of the fact you have not had any major oil spills, you nevertheless conclude, or the Governor does, that definitely there would be oil spills occurring from such an operation?

Mr. MORRIS. That is what we are afraid of.

Mr. COHEN. Senator Noonan, you seem to be just the opposite, the total extreme from Mr. Morris, because Mr. Morris emphasizes the landside impact, whereas on page 20 of this particular report of Ameraport, you say the only significant threat to the environment posed by the deepwater port is the oil spills from tankers or the port.

There is nothing really said about the landside. You dismiss it as not terribly relevant, or terribly significant as opposed to Mr. Morris, who emphasizes landside impact.

Mr. MORRIS. You want to realize they have much more land than we have.

Senator NOONAN. The prelude to that is in reference to the hydrology in the offshore area, our currents run counterclockwise in the eastern part of the gulf. The hydrology points out because of the wind, the prevailing winds, and also because of the fresh water flow from the Mobile and Pascagoula Bays, that it keeps a constant pressure moving in a southwesterly direction, so if there were an oil spill, there is sufficient time for mopping up from shore.

Mr. COHEN. I was referring to the landside impact, such as population and dumping of raw sewage. That is not really emphasized in your report at all.

Mr. MOELLER. Congressman, may I answer to that point?

Mr. COHEN. Surely.

Mr. MOELLER. We have been very concerned about that. We have just completed our phase 2 studies that have directed themselves to these particular issues specifically.

We have studied certain areas in Mobile County in which every one of these factors has been considered and weighed, and where the impact upon the environment will be considered minimal.

We have also investigated other sites where we have found the impact of these activities would not warrant, would not permit a development, so we have tried to follow the rules and have the alternatives.

I have the outlines here, the chapter headings, Mr. Congressman.

I have agreed with counsel previously to make these details available to the committee as a part of the record. But we have been very concerned about this.

Mr. COHEN. Dr. Moeller, on page 4 of your statement, the appendix, you suggest some sort of incongruity between the powers of the State to regulate in the way of imposing taxes and the power to enforce those regulations beyond the 12 mile zone, and I would like your opinion as to whether or not you are aware that some States have passed regulations which would impose either a surcharge or a tax upon oil coming into their State and setting up an oil spillage cleanup fund.

I would like your opinion as to whether or not you have analyzed that, whether it is consistent with the State's police powers, as talked about by Mr. Morris.

Mr. MOELLER. I have not made an in-depth study analysis of that, Congressman, for the simple reason I have had so many other areas, but I am basically familiar with it, and as far as the State imposing the surcharge on oil that flows through pipelines, it would be my opinion that their jurisdiction to do this would only lie in areas that were subject to State jurisdiction, that is within the 3-mile limit.

Mr. COHEN. But any oil coming into their 3-mile limit would be subject to taxes for a cleanup fund.

Mr. MOELLER. Well, quite frankly, I think this is an issue that will probably have to be decided by the Supreme Court.

There are questions as to whether or not this would place an undue burden on commerce.

Mr. COHEN. I believe the Maine Supreme Court just ruled it was legal for the legislature to do that in the State of Maine.

Mr. MOELLER. Texas is doing it already, and I believe Louisiana has a surcharge, and Mississippi does, too.

We, in our Alabama laws, have provision for taxing throughput via pipelines from oil fields. We have some oil fields that are under development.

I think you have to go to the basis, the object whether or not it is to regulate the commerce, or whether or not it is to provide for a source of revenue to actually cover the cost of the use of the State's lands.

Mr. COHEN. Just one final point.

Are you suggesting then, if you have a variety of imposition of taxes that this might constitute an undue burden on interstate commerce?

Mr. MOELLER. It is conceivable it would, yes.

Mr. COHEN. Thank you, Mr. Chairman.

Mr. DE LA GARZA. Mr. Ruppe?

Mr. RUPPE. Thank you very much, Mr. Chairman.

Do any of you gentlemen have evidence to show, or to prove that oil brought into the Gulf States via the offshore terminal route would indeed go to the Midwest, or go to the East?

Are there pipeline facilities, or the other facilities either in being today or planned for construction, to insure that petroleum products into the ports you have envisioned would ultimately find its way into the Midwest and the eastern petroleum markets?

General CROSS. A good portion of it would, yes, sir. From Louisiana I believe you have the Capline that sends a good bit of oil to the Midwest.

You have the Big Inch from Texas that sends it up to the east coast.

Mr. RUPPE. Are these facilities presently taxed to about their capacity?

If they have room for additional barrels in the Midwest or East are there other pipelines being planned for distribution of this product into the oil shortage areas?

General CROSS. I do not believe I can answer that question.

I would imagine that someone from the oil companies would be better equipped to answer it.

My judgment is that, though, yes, they would be just about used up, the capacity would at this point, and that any additional oils that might have to flow to those areas would require new pipeline capacity just like, I think, we are on the threshold of seeing new refinery capacity having to be built around the country and, similarly, your pipelines with the increased demand.

Senator NOONAN. Congressman, this may or may not be accurate because it is hearsay, but my understanding is that the Capline is operating in about 65 percent of capacity.

My understanding also is that they are considering a parallel line to handle any increased capacity, providing the permit and licensing and so forth reaches fruition.

The Colonial pipelines, the Plantation pipelines and, I would say most of the pipeline companies are awaiting the action of Congress. They have plans and ultimate plans and so forth for expansion of their pipelines throughout the country and also ultimate plans with respect to the selection of these pipelines.

Mr. RUPPE. Thank you, Mr. Chairman.

Mr. DE LA GARZA. Does counsel have a question?

Mr. HEYWARD. Thank you, Mr. Chairman.

In connection with the statement by Governor Tribbit of Delaware, Mr. Morris, in your Coastal Zone Act, you do prohibit major industrialization along your coastal shores. Is that not correct?

Mr. MORRIS. With our permission, you do.

Mr. HEYWARD. Can you give permission to put it in there?

Mr. MORRIS. It is pretty hard to get.

Mr. HEYWARD. I understand, perhaps erroneously, that the law forbids major industrialization. Am I wrong?

Mr. MORRIS. I am not going to go quite that far, but I think you are probably right.

Mr. HEYWARD. Does "major industrialization" include pipelines?

Mr. MORRIS. That applies to pipelines as well.

Mr. HEYWARD. Would it be possible under your act to get permission to lay pipelines as long as it did not result in major industrial complexes?

If you could just furnish that for the record, I think it would be helpful.

If Delaware sincerely does not want an industrialization to take place there, it sems to me it could handle it under its present laws rather than having Federal legislation providing for state veto for the placement of a facility somewhere off the coast. It could, in effect, control the movement inshore even if they did not control the location oshore.

My next question was, do you not consider that from an environmental viewpoint it would be better to transfer the oil offshore than to transfer it by lightering operations within Delaware Bay?

Mr. MORRIS. Well, it would seem to me it is not regulated in lightering at the present time, and I assume that if you had a superport that, in all probability, it would be supervised to a great extent.

Mr. HEYWARD. What I meant was a offshore terminal out in the ocean rather than a port within the bay itself.

You would have essentially the same problem if you had it in the bay itself.

Would you not agree from an environmental viewpoint, the threat to Delaware to have the transfer somewhere some miles offshore would be less than having the transfer by lightering operation right within Delaware Bay?

Mr. MORRIS. I think lightering is the worst, and I am inclined to agree with you that if properly policed, it would be much better than the lightering operation at the present time.

I might say that we are just awfully fortunate that we have not had real trouble here.

Mr. Heyward. I wonder if I could get a reaction from any of the witnesses as to whether the legislation should put a limit on the number of these offshore superports or whether the States have already considered that question?

General Cross. I think we might if the legislation, as it is finally enacted, comes out with the provisions that Texas has proposed that within itself would give Texas the authority to limit or otherwise restrict the kind of facilities that would be built off the Texas coast. And that would be adequate.

In other words, I would not want to see the Federal legislation be so restrictive that it will say we will build one port off the coast of Texas or two or four ports.

Mr. Heyward. I do not think the legislation would pick the spot because it would be some determination by the agency given the responsibility.

I was thinking of an overall maximum that we are really looking to.

Seadock testified that they would be capable of handling 3 to 4 million barrels a day by 1985.

LOOP said 4 million barrels a day by 1985.

Ameraport is talking in terms of 1 to 1½ subsequently building up to 3 million.

We have already gotten 11 million barrels of oil, and from all the figures we get, this is about as much increase as we are going to need to take care of us.

So I am not sure that the fears of some of the Eastern States are as really practical as they might otherwise be.

If the Gulf States want them, and the Eastern States do not, and the economic situation is such that the costs is not prohibitive to move it, then a minimum number of offshore terminals, it seems to me, would solve the problem.

Would you agree with that?

General Cross. Yes, sir.

Mr. Moeller. May I address myself to your question?

Mr. de la Garza. Please do so.

Mr. Moeller. I would suggest that the basic law of economics would be the best restriction that you could have because the people that build these things are only going to build them if, after reasonable marketing studies, they prove to be profitable.

I really would not be concerned with numbers. I think the economies will take care of that. I think the economics will take care of that situation.

Mr. Heyward. I am inclined to agree with you, Dr. Moeller. And, incidentally, I would also say they are going to locate them at least reasonably in access of the refinery capacity which is going to have to be developed along with them.

Mr. Moeller. Yes, sir.

The refineries will dictate the location of the superports rather than the reverse.

Mr. de la Garza. Mr. Rountree?

Mr. Rountree. Thank you, Mr. Chairman.

Let me address my questions, I guess, to all of you, and then perhaps the best man can respond.

Have the States of Delaware, Alabama, Mississippi, and Texas commented on H.R. 2020 which is pending before another committee?

Have you testified over there in relation to the concepts embodied in that bill?

Mr. Moeller. I appeared before that committee last Thursday.

Mr. Rountree. In the bill there is a provision which essentially indicates that the State that is affected by a location of an offshore port would have the ability to, in essence, veto that location even though the location would be off the shores of an adjacent State.

In the Gulf Coast, this raises a particular vexing problem with perhaps the State of Florida being involved in the placement of any offshore port in the gulf area. I am sure that would give you some concern, would it not?

General Cross. Yes, sir.

Mr. Rountree. Is that the way you interpret that section of H.R. 2020?

Mr. Moeller. No, sir, we do not.

Mr. Rountree. Have any of the State legal counsels or attorney generals conducted a legal analysis of the extent and scope of State authority and power under concepts that we are talking about in relation to deepwater ports vis-a-vis the Federal interest under the commerce clause of the constitution, State Police powers, state health responsibilities, etc.

Mr. Moeller. Yes, sir, we did a preliminary assessment, more of an identification of issues and broad conclusions which we published.

Mr. Rountree. Will you supply that for the record?

Mr. Moeller. That has been introduced into the record.

Mr. Rountree. How about Texas?

General Cross. One of the points in the initial charter that created the Texas Offshore Terminal Commission was to examine the International, Federal, and State laws, local laws, to a finite degree to determine what could or could not be done.

That study is ongoing at the present time. We have commissioned the Texas Law Institute to do that for us. We should be hearing from them probably in 2 or 3 months, but at this point, the questions have not been answered.

Mr. Rountree. Maybe you can send it up to us.

Mr. Moeller. We are continuing our efforts, Mr. Rountree.

Mr. Rountree. How about Delaware?

Mr. Morris. I would like very much to talk to my Governor and the attorney general about that also.

Mr. Rountree. I think the role of the State is an important one, but it is extremely difficult for us at this point in time to really establish the relationships between International law, Federal law and State law under existing law. Then, of course, the changes that might conceivably have to be made in both the Federal law and in your corresponding State laws as we try to structure a piece of legislation.

This gets into essentially three areas which I would like to break up for you for your thought processes, and one is the actual license of construction itself, what role should the State play vis-a-vis the Federal Government.

Then we get involved in the actual operation of the facility once it is built outside of 3 miles. Then, inside of 3 miles, and then, of course, we get involved in the land regulations under existing laws, and the Federal and State Coastal Zone Management Acts. And as a corollary to that, you get involved in financing, rate structures and bonding, and that type of thing.

This is the information we would have to have to structure a good piece of legislation. An analogy has been made to the offshore deepwater port as being much the same type of platform that is built for the extraction of resources under the Outer Continental Shelf Lands Act, or on the Outer Continental Shelf.

Do the States, under that particular Federal law, play a role in the regulation of the pipeline and its operation, and enforcement of State laws applicable to that particular oil extraction platform?

Mr. MOELLER. I can only speak in broad terms to that, Mr. Rountree.

There are basic offshore drilling regulations and operations that are administered by the Department of Interior on the Outer Continental Shelf, and they have established the standards and the policing of this.

Obviously, State law must come into effect at a point.

In my presentation, I referenced the first circuit case which, I think, points out some of the difficulties.

Mr. ROUNTREE. Is that the *Read* case?

Mr. MOELLER. Yes.

I point out quite a few difficulties that we have in there. I think that is going to have to be solved legislatively.

I do not think, Mr. Rountree, we have the answers to it right now in the existing State or Federal laws.

I think there is going to have to be a concurrence, a general getting together between the States and the Federal Government, to come up with a reasonable domestic law that would be applicable.

Mr. ROUNTREE. Thank you.

At least in the administration's version, we have a blanket application of all State civil and criminal laws, and quite frankly I do not know what that means and what the impact would be.

Presumably, we are talking in terms of police power type laws and public health type laws, Workmen's Compensation, safety and what have you.

Mr. MOELLER. You cannot figure out the nearest coastal State.

Mr. ROUNTREE. I agree with you. Thank you very much, Mr. Chairman.

Mr. DE LA GARZA. Mr. Eckhardt?

Mr. ECKHARDT. Mr. Chairman, I have a question.

On this question of Federal and State law, I have Mr. Moeller, your Alabama Law Institute Analysis and, of course, it points out correctly that the Truman Proclamation of 1945 embraces within general national jurisdiction the Continental Shelf.

You do not have any doubt, do you, but that Congress could enter the field respecting navigable waters, institute its own guidelines with respect to applicable law, perhaps fashioned after State law of the adjoining region and could not only govern the area, the navigable area, but I do not think its jurisdiction would stop at the water's edge any more than, for instance, the Harbors' Workers and Longshoremen's Act.

Federal law could govern all reasonable questions concerning this matter if we so desired, could it not?

Mr. MOELLER. That is a difficult question.

Mr. ECKHARDT. I am not saying that we should.

I am saying it would seem to me to be within the reach of Federal jurisdiction with respect to all questions related to the offshore port itself.

Now, the question of whether or not the pipelines went to plants shoreward, I suppose the State law could govern the matter relating to the pipes themselves, but it seems to me this is not a terribly difficult jurisdiction dilemma.

Mr. MOELLER. There are some jurisdictional problems, Congressman, that bother me as far as I recognize the role that the Congress can play and ought to play.

These facilities, however, are going to be located in waters that heretofore have not been really subject to the jurisdiction of the United States as far as exercising a role of soveriengty.

I think that we have an obligation to be very careful in this area. We have an obligation by treaty, too, of course, to maintain freedom of navigation and safety under our various treaties.

I think there are ways and means of applying United States law or finding a body of law that could be applicable to this area, and I would agree with you that, in all probability, it should be the Congress that makes this decision.

I would suggest that it would be better made in consultation with the States to avoid strong conflicts.

I do not think that you can give just a blanket yes or no to your question, Mr. Congressman. I would much appreciate the time to give it a little more thought. I think it is such an important question, sir, that I would be reluctant to rely on my total recall.

Mr. ECKHARDT. I cannot see how there would be any area that we need to reach the Federal Government could not reach either by its powers with respect to navigation or the commerce power.

I am not saying that we should necessarily, to the exclusion of State law, for instance Federal law concerning things like Federal Military Reservations where they have adopted the State law as the criminal law, that something of this nature may be utilized as a pattern.

Thank you.

Mr. DE LA GARZA. We thank you, gentlemen, for your valuable contribution, and look forward to your continued interest in this matter. If you develop further information on this subject, we hope that you will contact us.

General Cross, I hope that you will extend our greetings to Governor Briscoe when you return to Texas.

The Commitee will stand in recess at this time, to reconvene tomorrow morning at 10 o'clock.

[Whereupon, at 12:05 p.m., the subcommittee recessed, to reconvene at 10 a.m., Thursday, June 28, 1973.]

OFFSHORE PORTS AND TERMINALS

THURSDAY, JUNE 28, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:10 a.m., in room 1334, Longworth House Office Building, the Honorable Thomas N. Downing, presiding.

Mr. Downing. The committee will please come to order.

This morning we will resume our hearings on H.R. 5091 and H.R. 5898, offshore ports and terminals.

We have two distinguished witnesses from the great State of Louisiana who will be introduced by our distinguished colleague, Congressman David Treen.

Mr. Treen. Thank you, Mr. Chairman.

As you know, I am quite interested in these hearings, because, being from Louisiana, we have one of the companies that is quite interested in constructing the port there. And, we have had in Louisiana now for some time a forward-looking plan to facilitate the construction of this type of facility, and it is with a great deal of pleasure that I introduce the executive director of the Louisiana Deep Draft Harbor and Terminal Authority, Mr. P. J. Mills, the executive director of that authority. Mr. Mills is a former distinguished member of the Louisiana State Legislature. Accompanying him is Randolph H. Parro, associate director of the authority. Mr. Parro is not a newcomer to Capitol Hill. He served here in the office of former Congressman Pat Caffery as his administrative assistant. Pat Caffery was my predecessor in the Third District of Louisiana.

It is with great pleasure that I introduce these gentlemen to the committee this morning.

Mr. Downing. We welcome you witnesses, and appreciate your coming.

I would like to say that you are ably represented by your introducer.

Do you gentlemen have a prepared statement?

STATEMENT OF P. J. MILLS, EXECUTIVE DIRECTOR, DEEP DRAFT HARBOR AND TERMINAL AUTHORITY, ACCOMPANIED BY RANDOLPH H. PARRO, ASSOCIATE DIRECTOR, STATE OF LOUISIANA DEEP DRAFT HARBOR AND TERMINAL AUTHORITY

Mr. Mills. Yes, Mr. Chairman, we do.

Mr. Downing. Well, Mr. Mills, suppose you lead off.

Mr. MILLS. Thank you, Mr. Chairman and members of the committee, and thank you, Mr. Treen.

I am P. J. Mills, executive director, Louisiana Deep Draft Harbor and Terminal Authority, known as Louisiana Superport Authority.

I would like to thank you for giving me this opportunity to express the position of the State of Louisiana in behalf of Governor Edwin W. Edwards on the subject of deepwater port policy and the general purposes of H. R. 5091 and H. R. 5898, which are presently before the committee for consideration.

I am pleased to acknowledge also that Louisiana is fortunate in having two of its distinguished Members of Congress sitting on this Committee—Mr. Breaux and Mr. Treen. I understand that Mr. Breaux is still in Geneva and will not be here today.

By way of introduction to my testimony today, I would like to define what we see as an exciting, vitally important project. I refer to the Louisiana concept of a superport; a multistage program that in its initial stage will be an oil terminal, and that grows through subsequent stages to a true superport, handling bulk, slurried bulk, and break-bulk commodities.

The timetable for development of the latter stages will be dictated by advances in shipping technology, in much the same way that the pressing need for oil terminal development is the result of the evolution of the supertanker.

The State of Louisiana and its congressional delegation have watched with interest the announcement of plans for deepwater port development off several east coast States. During that 3- or 4-year period, we have also observed that those announced plans have been repudiated by the States offshore from which the facilities were to be located, primarily because of inadequate environmental planning on the part of the developers.

With the experience of those east coast States in mind, we in Louisiana moved last year to lay the groundwork for establishing of a State agency through which to create the proper climate for public acceptance of the superport concept in Louisiana, and through which the most comprehensive planning for deepwater port development could be undertaken.

In cooperation with several oil companies and other private business and industry in Louisiana, who provided the funds, we established an ad hoc task force to pave the way for superport development off the Louisiana coast.

One of the functions of the task force was to draft legislation to create a State agency to oversee the promotion and development of the superport concept in Louisiana. The regular session of the Louisiana Legislature last year created the Deep Draft Harbor and Terminal Authority, commonly known as the Louisiana Superport Authority, and charged this agency with the comprehensive planning associated with deepwater port development off the Louisiana coast.

Written into the legislation was provision for one of the most comprehensive environmental protection plans adopted by any State up to this time as related to an individual project. The legislative plan was drawn by the Sea Grant legal staff and Center for Wetland Resources at Louisiana State University.

The environmental protection provisions provided for an ongoing plan extending far beyond the environmental impact statement required by the National Environmental Policy Act—NEPA—and would insure the maximum protection possible for the delicate and valuable coastal marshes of Louisiana. The State agency came into being July 26, 1972, and was formally constituted on September 7, 1972.

In creating the Deep Draft Harbor and Terminal Authority, Louisiana established the first State agency in the United States for the purpose of planning, promoting, and developing a deepwater port off the coast of a State.

In so doing, Louisiana allocated some $350,000 for fiscal 1972–73 for the operations of the agency and the initial development of the environmental protection plan mentioned above. Some $750,000 has been appropriated for the coming fiscal year to expand the environmental plan as required by our legislature and perform the other work necessary to see the first phase of a deepwater port, the oil terminal, developed off the coast of Louisiana.

This plan must be promulgated by January 1974. Prior to that time, public hearings will be held on the plan, and public input to the plan obtained through the workshops held throughout the State of Louisiana. The public workshops will precede the public hearings in order to obtain public suggestion as to environmental protection prior to finalizing the plan.

An economic impact study of the effects of an offshore oil terminal has just been concluded and was announced by Governor Edwards in Baton Rouge on June 8, 1973. A copy of that study is included as part of the original of this statement, which I will present to the committee at the conclusion, is a copy of act 444 of 1972, Louisiana Revised Statutes 1950, as amended, Title 34, Sections 3101–3114. The latter spells out the terms which must be contained in the environmental protection plan which is to become a rule of procedure of the Louisiana Deep Draft Harbor and Terminal Authority.

We do not presume to suggest to the Congress which agency of the Federal Government would be best suited to the issuance of authority—either environmental or total—for construction of a deepwater port off the coast of our State or any other State.

We welcome the fact that serious consideration is being given in Congress to establishing that authority within one Federal agency. With the critical need for development of deepwater ports to import oil to the continental United States, this action is quite timely.

We in Louisiana feel that by our actions over the past 13 months, we have created a climate in our State which will welcome the development of an oil terminal, and subsequently other types of facilities in the Gulf of Mexico off our coast. It is our opinion that the construction of an oil terminal and its operation are logically the function of the private sector, either the oil companies themselves or terminal firms which have expertise in this area.

Likewise, we feel that any authority emanating from the Federal Government for the construction and operation of such deepwater facilities should be channeled through the State offshore from which that facility is to be located. The reasoning for this may seem unusual to some; however, it is not to us.

Louisiana has now, and is willing to continue, to expend State funds to promote the development of a deepwater port off its coast, because we can envision the enormous economic benefit to our State and our region.

Also, we envision the development of this facility within the framework of the most modern environmental protections available, and feel that the economic benefits can be won without jeopardizing our unique coastal environment.

As we move to promote this project, we can also see that substantial economic impact will occur in our State because of the development of ancillary industries. That fact is borne out by the economic study attached to the original of this statement.

There is a serious potential danger to the coastal environment from such a facility, particularly an oil terminal. Since our coastal area is highly productive in fish, shellfish, and fur-bearing animals, we are particularly conscious of the potential damage from oil spills.

We are also conscious that funds must be available to minimize damage and restore damage that might occur to the existing marshlands from an offshore spill or rupture of onshore facilities. These are burdens which would have to be assumed by any State offshore from which such a facility is built, and is a further reason why the coastal States offshore from which such a facility is built should be given primary consideration in any permit granting procedure established by the Congress.

With regard to H.R. 5091 and H.R. 5898 before the committee at this time, we in Louisiana feel that the concentration of licensing authority in one Federal agency is sound. However, we would expand the provisions of both bills further to provide that those States who, by their affirmative actions, favor the development of deepwater terminals off their coast be given primary consideration in any licensing procedure that is established by the Congress.

We feel that it is simple equity to place the same priority on the interests of those States favoring development of offshore deepwater port facilities as is placed on those States opposing such development.

In essence, Louisiana is of the opinion that whatever legal regime is established to license the development of so-called "superports" off the coast of any State should grant primary considerations to the State offshore from which such a facility is to be built. This would apply in either granting a license for such an operation, or in the refusal to grant such a license because of the coastal State's specific legal prohibition against such coastal development. In this way, those States favoring such development will have the same voice in their destiny, as will those States opposing such development.

By giving the States the authority over the development of such deepwater facilities, Congress would in effect be giving the coastal

States an opportunity to negotiate with private firms to construct and operate such facilities for the mutual benefit of both parties and the public at large.

Terminals such as are needed to bring in foreign oil have been built all over the world by both oil companies and firms which specialize in building and operating terminals. The operation of those facilities, coupled with the heavy development of industry which normally follows, has a high potential incidence of environmental difficulties which will affect most the States offshore from which they are located. Those operations also have a very high level of profitability from which some form of payment could and should be made to the affected coastal States either directly or through the Federal agency regulating such operations in order to give the coastal States which choose to permit such operations off their shores some immediate financial means to defray costs which must be incurred as a result of those operations.

Louisiana is one State which strongly favors the development of so-called superports at this time. However, the existing fishing and trapping industries of Louisiana's coastal areas are far too important to the livelihood of thousands of our citizens for the State government to take them lightly. The wide-based public support for a Louisiana deepwater terminal in our view is contingent upon the knowledge of many of our State's people and some of our foremost environmentalists that the government of Louisiana is sincere in its determination to protect and maintain the integrity of our coastal environment.

The fact that the legislation creating our Deep Draft Harbor and Terminal Authority goes to such lengths to insure environmental protection is in itself insurance that the faith will be kept with the environment.

It is relatively easy for a State to refuse to permit the development of such facilities off its coast. On the other hand, it is difficult to balance the economic benefits against the environmental considerations and walk a middle road that permits the development of superports.

We in Louisiana have chosen the difficult course of wedding environmental excellence to economic development. We feel that it can be done, and intend to see that it is done. Those in the private sector who would develop such facilities seem to be aware that only with the assistance of the coastal States can such a balance be attained.

Louisiana is offering that assistance, and has created the climate which will permit such development. We are merely asking that Congress, in designating which agency or agencies will have responsibility for granting for such development, consider the coastal States first.

As legislation is drafted to place such authority in a designated Federal agency, we respectfully request that the authorizing agency be required to offer primary licensing authority to the State offshore from which a facility is to be located.

In so doing, you will give the coastal States an opportunity to participate more viably in the Federal system, and assist them in meeting the challenges which will naturally come from such offshore development.

In our opinion, it is an excellent opportunity for the States to share with the Federal Government the responsibilities for solving an immediate national crisis. It would also afford the States an excellent opportunity to work with private interests to develop deepwater terminals, with the States providing environmental safeguards, and private industry the economic development.

Louisiana stands ready to play its role, and asks your help in making that possible.

Thank you, Mr. Chairman and members of the committee. Mr. Parro and myself will be pleased to answer any questions of the committee which you may wish to pose to us, Mr. Chairman.

Mr. Downing. Thank you very much, Mr. Mills, for a very excellent statement.

Does your colleague have anything to say?

Mr. Parro. No, sir.

Mr. Downing. First, I want to congratulate the State of Louisiana for the progressive steps it has taken to meet this problem.

Mr. Mills. Thank you.

Mr. Downing. They have gone right ahead and bitten the bullet. They have done an excellent job.

Do you think that priority should be given to the States that have gone forward with the necessary State legislation?

Mr. Mills. Yes, Mr. Chairman, we do. We feel that those States where the strong intention to assist this type of development has been undertaken, both through legislation and administration of State funds for that purpose, that in the granting of licensing for this, that for those States that are interested in his particular type development should be given primary consideration with the idea in mind such as contained in the language of the administration's bill, which has been introduced in the House and Senate, dealing with this subject for licensing in a single agency, giving these States the right to transfer or the recipient the right to transfer whatever license may be received and, in so doing, have a little more involvement in what is done off the coast of a particular State.

Mr. Downing. You believe the State should have the right of veto?

Mr. Mills. This is a question which, at this point in time, Mr. Chairman, I am not absolutely certain that we are ready to address ourselves to, but would be willing to submit a position to this committee if you so desire.

The right of veto, we feel, would be, in effect, contained in the granting, say, of primary consideration in licensing to the States in that those States that choose not to exercise that priority and could do so and, in effect, exercise a veto without being given specific authority.

I can say that we in Louisiana do not favor the right of veto of an adjacent State.

We feel very strongly that this could create considerable legal problems and, in effect, I believe, chaos, insofar as the Federal, State, and multi-State relationships are concerned, particularly in the Gulf of Mexico where, as has been pointed out in this committee, you have had testimony that the theoretical boundaries of the coastal States in the Gulf of Mexico could create considerable problems insofar as adjacent State definitions are concerned.

Mr. DOWNING. Mr. Eckhardt?

Mr. ECKHARDT. Mr. Mills, I want to compliment you on your approach to this question on veto.

It seems to me the testimony we had yesterday fails to recognize the national concern with the superport and also for the possibility of conflicting concerns of two adjacent States, one of which desires to move forward and is willing to do so with standards of the type you have described, and another State which wants to retain certain of the values, like the recreational values, without weighing the commercial value against it.

If I understand you correctly, what you are saying is that instead of instituting a procedure by which one State directly affected by the superport would have the right to veto, you would envisage a State having the power to generate the licensing procedure where it has an interest in that licensing procedure and in the absence of an adjacent State generating that licensing procedure, the Federal Government would either not enact or be very circumspect in moving which would, in effect, result in the same thing, but would not give one State the power to influence the economic future of another.

Do I understand you correctly there?

Mr. MILLS. Your interpretation is exactly as we intended it, Mr. Eckhardt.

We have taken into effect a positive approach to the problem rather than a negative one. And rather than granting absolutely a veto power, we place within the States the priority to act or not to act, as they see fit.

Mr. ECKHARDT. Well, I want to commend you and your State for your obvious sensitivity concerning environmental values.

I know from experience with my State that Louisiana and Texas produce somewhere around, I think, one-third of the total shrimp produced in the Nation. I forget the exact figure. And I think we vie from year to year as the leading producer in that area.

I also recognize that the capital value of the shrimp production in either of our States is absolutely enormous and sometimes, I think, failure to recognize the comparative value of one industry against another results in some rather inept action.

I know that you have looked at this matter. I know that as you say your coasts are among the most fragile with respect to the environmental interests.

Mr. MILLS. That is correct.

Mr. ECKHARDT. I would feel that the example you give of Louisiana is the one that probably most strongly militates in favor of giving the State a strong voice in determining how its interest may be best protected.

Thank you, sir.

Mr. MILLS. Well, thank you, Mr. Eckhardt. I appreciate your comments very much, and we are very concerned because before, for example, there was oil in Louisiana with which, incidentally, the fishing industry has existed very compatibly over the years, but before there was oil, there was shrimp and fish and oysters, which all of us in Louisiana, who pride ourselves on being gourmet of one form or another, enjoy, and as do its citizens of States all over the Union.

And the fishing and fur industry in Louisiana are significant parts of our economy. And we weigh this very heavily in the assessment of economic gain for the moment as against a long-time economic value of those particular industries. And we feel the two can continue to exist, so to speak.

Mr. Eckhardt. One would also not want oil in his crawfish bisque.

Mr. Mills. No, sir; unless it were olive oil.

Mr. Downing. Mr. Grover?

Mr. Grover. Thank you, Mr. Chairman.

You are looking at a multifold operation, are you?

Mr. Mills. Yes, sir.

Mr. Grover. When you address yourself to the initial problem of an oil terminal, we are talking about distributing imported crude oil.

When we go beyond that to the development of this oil terminal ultimately into a superport, it then becomes a wide-range operation activity of receiving and distributing all types of merchant marine carried goods, I presume.

Do you contemplate going beyond that to refinement of crude oil, petrochemical activity offshore?

Mr. Mills. No, sir; this is not envisioned.

It will be looked at, however, the possibility of it will be looked at, I feel, in the development of a master plan for long-range development which is required under our statute, and also which we have charged to the Henry J. Kaiser Co., Kaiser Engineers, under contract, for development of a master plan beyond the oil terminal facility.

We envision the oil terminal facility developing as a single purpose facility unto itself in the location which Mr. Read outlined, Mr. Read of Loop, to this committee, day before yesterday.

The dry cargo and other purpose facility would be developed in another area, not necessarily coterminus or adjacent to that particular development for the oil terminal.

Other developments that might be envisioned in this regard have been looked at, for example, the School of Environmental Design at LSU, whose dean is a member of our board, representing the environmental community, the idea being the development of some type of offshore capability. And this is very long-range and in a conceptual stage, but may well come to be one day the development of offshore facilities of various types, whether for fabrication of various products or for the refining of oil or generation of electricity, or even, as some have envisioned, the development of offshore island cities. And these concepts have all been put forth and will be looked at to some extent in the determination of long-range activity off the coast of our State.

Mr. Grover. Now, the oil terminal concept, the initial stage, are you looking to piping or lighterage?

Mr. Mills. No, sir.

We are looking basically to plan which was submitted to the committee by the LOOP organization, the basic principle which they have proposed, which has been also proposed to our commission but has not, at this time, been formally adopted.

There are a number of questions which we are having answered in connection with the Loop organization, but the basic principle is the one which we favor and would follow in approach, that of a monobuoy of several monobuoys offshore with the oil piped onshore to a large capacity storage facility, and then moved by pipeline to existing and new refineries within the State of Louisiana, and then by pipeline further to refineries in the States all the way to the Canadian border.

Mr. Grover. That is all.

Mr. Downing. Mr. Mosher?

Mr. Mosher. No questions.

Mr. Downing. Mr. Gooding?

Mr. Gooding. No questions, Mr. Chairman.

Mr. Downing. Mr. Treen?

Mr. Treen. Thank you, Mr. Chairman.

I just want to congratulate Mr. Mills and Mr. Parro for their presentation here today.

As a Representative from Louisiana, this is a matter of vital interest to me as Mr. Mills and Mr. Parro know. And I sincerely hope that the Congress will move very quickly to get a bill to the floor for action, because it is my view that the need for this has been amply demonstrated.

We have had a great amount of testimony by administration witnesses, industry witnesses, and others, that the superport is an essential need. And considering the fact that the State of Louisiana, through Mr. Mills and Mr. Parro, and this authority they represent, have made such advances with respect to environmental protection, I would hope that Congress would move quickly. I think the State of Louisiana is ready, or essentially will be ready at any reasonable time that Congress could produce a bill.

That is correct, Mr. Mills, that you would be ready?

Mr. Mills. That is correct, Mr. Treen.

And if I may quote our senior Senator from Louisiana, Mr. Long, who said, "If Congress would go ahead and get out of the way, Louisiana is ready to move." And they were his words.

And we certainly would appreciate the time when that arrives so that we may be able to move ahead in this regard because we feel, as you said, the necessity to do something in this area is very strong.

Mr. Treen. Well, again, thank you very much for your presentation.

Mr. Downing. Mr. Bowen?

Mr. Bowen. No questions.

Mr. Downing. The committee wishes to thank you gentlemen for your contribution, and I think the committee would appreciate a position paper on the question of whether the States should have a right to veto.

Mr. MILLS. We will be happy to have it prepared and submit it, Mr. Chairman, through one of the members of the committee.

(The position paper had not been received at the time this hearing went to press.)

Mr. DOWNING. Counsel has several questions.

Mr. HEYWARD. Mr. Mills, in connection with the role of the State, I am not quite sure exactly what you envision.

Do you think that the legislation should provide for some State licensing procedure in the permit, or would you envision that as a part of the regulatory agency's procedure?

Would you like to see something in the legislation?

Mr. MILLS. I would, sir.

I think also that those States possibly who do not favor such development would prefer to see it on the basis of the thesis that we have put forth today, because by having it included in the Federal legislation, it would given them, then, the opportunity to exercise or not exercise that priority if they so choose.

In the absence of that, in leaving it to administrative discretion, I think that you may wind up with some difficulties of an administrative nature that might present serious problems in the areas where those States do not wish to move.

Mr. HEYWARD. Well, in connection with questions that Mr. Eckhardt asked, would not the same problem of potential conflict with States arise if the States themselves were involved in permit systems?

For instance, as between Mississippi or Alabama, or as between Florida and Alabama or Louisiana and Mississippi, what State would have the authority, the one through whose lands the connecting link went?

Mr. MILLS. Well, I think it would be pretty much determined by that State offshore from which directly the facility was to be located, and through which, in terms of the oil terminal, and through which a pipeline would traverse.

Mr. HEYWARD. Would not the State control be possible through those State connections through pipeline?

Mr. MILLS. Definitely so, I think, on the basis of my knowledge. And I am not an attorney, but my associate is. On the basis of my knowledge of the law as it exists within the 3-mile limit, that is the State's jurisdiction and authority would certainly exist in that regard.

Mr. HEYWARD. I was really referring to your own remark that when you extend the State lines into the gulf, you might run into a problem. And I am just wondering if there would not be problems created as between States if the States themselves were the ones involved.

Mr. MILLS. Well, I think this is a situation that would probably be resolved by administrative regulations, authority for which is spelled out in most of these bills.

Again, with the particular department of Government in the executive branch that is responsible for this, I think that possibly could be resolved in such a way that that problem could be avoided.

Mr. HEYWARD. In any case, I assume you would like for the legislation to recognize that the States have the major role, no matter how it is expressed.

Mr. MILLS. Very definitely so.

Mr. HEYWARD. Thank you.

Mr. DOWNING. Mr. Eckhardt?

Mr. ECKHARDT. Thank you, Mr. Chairman.

That raises several questions.

On this point, suppose, for instance, a terminal was sought to be built to serve Lake Charles and Port Arthur.

I assume from your statement that you would feel that if either Texas or Louisiana indicated a desire or generated the desire to build a terminal, you would feel that this ought to weigh heavily with the Federal licensing authority in favor of building the terminal.

Mr. MILLS. I think that is a fair interpretation.

Mr. ECKHARDT. But you would feel in a circumstance in which such a terminal were opposed by Texas and supported by Louisiana, that regardless of whether it is technically within the waters off the State of Texas or the waters off of Louisiana, that Texas' objection should not constitute an effective veto?

Mr. MILLS. Well, I think the magnitude of the objection, based on substantive information that could point up, for example, a very drastic potential environmental hazard, this type of thing, this is something that would have to be weighed by the licensing agency.

I think an arbitary offhand objection, because of competitive advantage, or one thing or another, would not necessarily carry as much weight as the substantive objection based on the sound environmental findings or other findings that would be detrimental to the adjacent State.

Mr. ECKHARDT. Well, there is, of course, no question but that either State desiring to regulate the manner in which the terminal is built or to influence the location of the terminal with respect to matters affecting environmental concerns of either State should be seriously considered by the licensing authority, but the question I am getting at is, you do not feel that the State should have the ultimate determination of negativing Federal licensing where the terminal would have economic advantage to both States, even though technically the location of the terminal might be in the one State or the other?

Mr. MILLS. That is correct.

Mr. ECKHARDT. Thank you, sir.

Mr. MILLS. I can, in this regard, if I might, Mr. Chairman, just expand.

Louisiana and Texas have a very excellent working relationship today, for example, on a joint project at Toledo Bend, where a large lake was developed, and each State completed with State funds and each State put up $6 million for development and have a joint compact executed for operation and maintenance of this lake facility. And it works very well.

Interstate cooperation, in addition to State-Federal cooperation, in this regard would be very essential, and I think is something that would have to be worked out in order to accommodate this purpose. But I think it is something that has precedent.

Mr. Eckhardt. Just one brief question.

With respect to the regulation of such term federally the State might have a wide range of authority with respect to its operation of the terminal affecting environmental concerns, would you not feel that with respect to interstate commerce that the Federal Government should have the ultimate authority to decide such questions as to whether or not the terminal would constitute a common carrier serving all of those who seek to utilize its facilities?

Mr. Mills. Yes, sir, that is correct.

Yes; I think that is in the national interest, and I think it is essential.

Our legislation envisions development of a facility that will be operated as a common carrier.

Mr. Eckhardt. Thank you, Mr. Chairman.

Mr. Downing. Mr. Lott?

Mr. Lott. No questions.

Mr. Downing. Mr. Treen?

Mr. Treen. Just this comment to Mr. Eckhardt.

Since SEADOCK wants to build a port off the coast of Texas and LOOP wants to build one off the coast of Louisiana, we will not block yours if you will not block ours.

Mr. Eckhardt. I am saying I do not see any real conflict. There might even be two or three terminals.

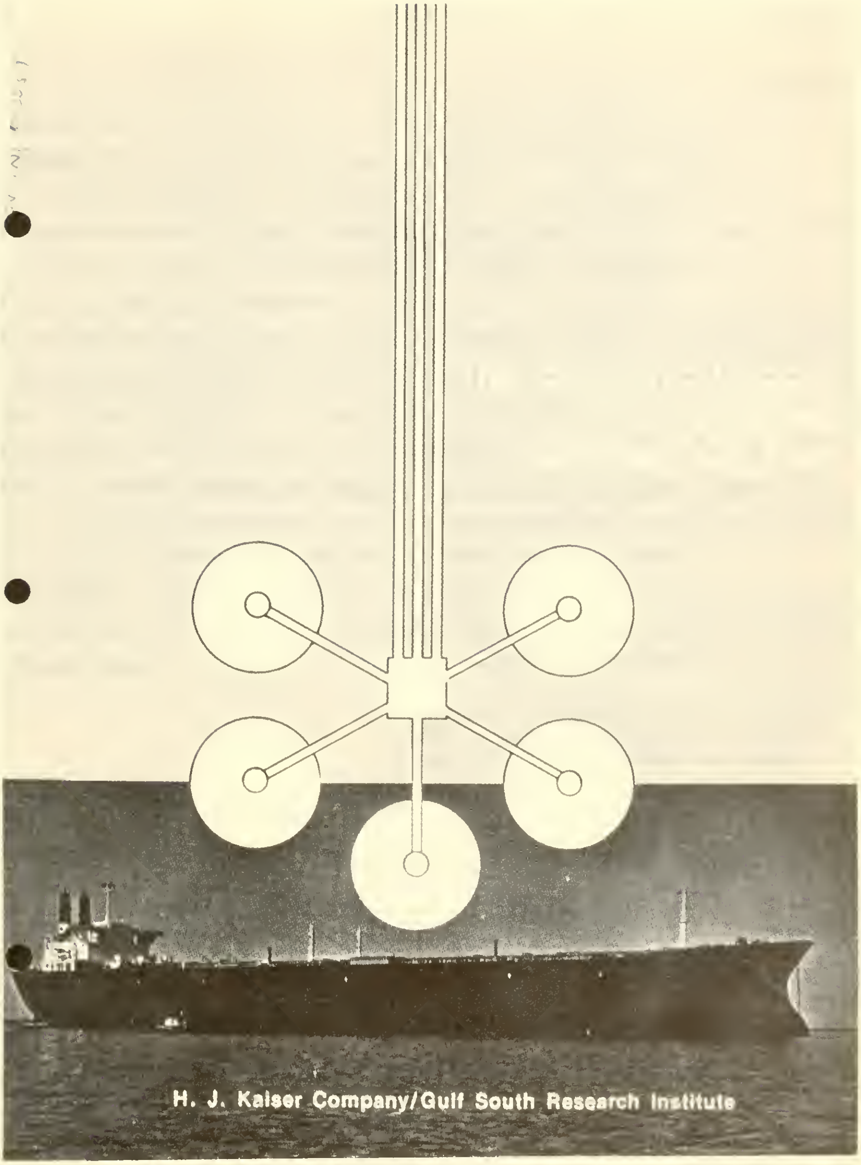
Mr. Downing. Thank you, gentlemen.

Mr. Mills. Thank you for the opportunity to appear.

Mr. Chairman, as I did say, I do have the study here of the H. J. Kaiser Co. on the economic impact of a Louisiana offshore oil port, the book with the blue cover, and have another paper entitled, "Navigation and Shipping, Deep Draft Harbor and Terminal Authority," prepared by the State of Louisiana.

Mr. Downing. Without objection, those documents will be reviewed by counsel and, if appropriate, inserted in the record at this point.

[The documents referred to follow:]



H. J. Kaiser Company/Gulf South Research Institute

May 1973

Final Report
Project No. AS-629

THE ECONOMIC IMPACT OF A LOUISIANA OFFSHORE OIL PORT

Prepared for:

Louisiana Superport Task Force
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PREFACE

This is the final report from H. J. Kaiser Company and Gulf South Research Institute (GSRI) on an economic impact study of a Louisiana offshore oil port. The study was coordinated by D. A. Neumann of H. J. Kaiser Company, in conjunction with the Economics and Social Sciences Division of GSRI, under the supervision of Jan W. Duggar, Ph.D., scientific director. Working under Dr. Duggar's direction were the following GSRI staff members: Charles E. Hinton, director, Environmental/ Resources Planning; Jimmy B. Allen, economist; James R. Steele, director, computer applications; Philip A. Thompson, urban designer; Shelton W. Perry and William B. Morrison, research analysts; and Annette M. Jordan, research assistant. The final report was prepared for publication by Yvonne L. Day, senior technical writer/editor.

The study participants wish to acknowledge the invaluable assistance of the staff members of LOOP Inc., and Ms. Virginia Simons of the New Orleans Chamber of Commerce, Economic Development Council. These individuals were particularly helpful during the data collection phases of this study.

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I INTRODUCTION

This study was undertaken to assess the impact of a proposed offshore oil port on the economy of Louisiana. The primary objective was to determine if benefits in the form of increased income and transportation cost savings would outweigh public and private costs associated with the terminal. If benefits should exceed costs, the offshore oil terminal could be declared to have positive net benefits and a favorable benefit-cost ratio.

The analysis began with the construction of petroleum supply and demand balances for three major consuming areas east of the Rocky Mountains. The present and future dependency of Midwest and East Coast regions for both crude oil and refined products from the Gulf coast and from Louisiana was calculated. This data was then translated into projections of refining capacity growth in Louisiana and a range of throughput volumes for the offshore oil port.

In assessing the impact of an offshore oil port, this study considered what would happen to refining capacity and petrochemical manufacturing if an offshore oil port were not built. In projecting the expansion in refining and petrochemical capacity generated by an offshore oil terminal, it was assumed that industrial growth would take place within a planning framework that guided and controlled, but did not prohibit, such growth. Employment and income benefits were estimated with the use of computer programs, which calculated how a change in employment and income in one industry would affect employment and income in other industries.

In addition to determining increased earnings generated by the preservation of existing jobs and the creation of new ones, the project team calculated the amount of transportation costs savings on crude delivered in very large crude carriers.

These benefits were estimated for each year through the year 2000. Costs similarly annualized include capital costs for the offshore port, port-to-shore facilities, and the connection to a terminal in St. James Parish. Costs for operating these facilities for crude destined for Louisiana refineries were also included in the benefit-cost equation.

Finally, it was recognized that the jobs directly and indirectly created by the offshore terminal will attract increased population to Louisiana. Costs would thus be incurred by state and local governments to provide services to this added population. These were also inserted on the cost side of the ledger.

Following accepted benefit-cost methodology, the project team converted both the benefit and cost streams of annual data extending to year 2000 to a present value and summed these. A benefit-cost ratio was thus obtained for evaluating the impact of the offshore oil terminal. In addition, costs incurred by state and local governments were compared to tax revenues expected to accrue from development stimulated by an offshore oil terminal.

With the exception of some escalation built into costs of the offshore terminal and related facilities, all benefits and costs were stated in 1973 dollars. The impact of inflation, if it were considered for all items, would be to enlarge benefits more than costs for future years.

II SUMMARY AND CONCLUSIONS

Two principal conclusions were reached as a result of this evaluation of the economic impact of an offshore oil terminal: (1) the benefits of the terminal--in the form of increased employment and earnings and in transportation cost savings for Louisiana--would exceed costs fivefold; and (2) an offshore oil port is urgently required because of a rapidly growing need for imported crude oil in Louisiana and in the Midwest.

This study found that if the offshore terminal is in operation by 1977, 13,400 new jobs will have been created by 1980 in petroleum refining, petrochemicals, and construction. Another 21,970 jobs will have been added in other industries. In later years, employment gains would be larger, as shown below.

	1980	1990	2000
New jobs directly created in refining, petrochemicals and construction	13,400	18,300	36,200
Induced employment gains in other industries	21,970	39,720	76,170
Total	35,070	58,020	112,370

Translated into increased earnings for Louisiana citizens, this economic expansion would cause the following income gains:

	1980	1990	2000
Increased earnings in 1973 dollars	$479,966,000	$999,697,000	$2,412,851,000
Increase per worker	$72	$117	$186

The income impact would be sufficiently large that, on the average, each worker in Louisiana would earn $72 more per year by 1980. This would increase to $117 by 1990 and to $186 by year 2000.

In addition to causing employment and income gains, the offshore oil port would stimulate several billions of dollars in new investment in Louisiana. Conservatively calculated in 1973 dollars, the following capital spending is forecast:

	1973-1980	1981-1990	1991-2000
Offshore oil port and connection to Capline	$ 404,000,000	$ 240,000,000	
New refining capacity	889,600,000	1,256,000,000	$1,259,200,000
Petrochemical plants	336,000,000	611,200,000	1,094,400,000
Total	$1,629,600,000	$2,107,200,000	$2,353,600,000

Refining capacity in Louisiana is expected to rise from 1,568 to 3,949 thousand barrels per day between 1975 and year 2000. The following average annual growth rates are forecasted:

1972-1975	1.9%
1976-1980	6.3%
1981-1985	4.0%
1986-1990	3.2%
1991-2000	2.6%

This projected expansion for refining capacity was found to be necessary to meet growing petroleum requirements in Midwest and East Coast markets. The dependency of these areas on petroleum products from Louisiana refineries will continue to grow, although refining capacity in these areas is also projected to expand. In the Midwest, refining capacity is forecast to increase at the same rate as the regional demand for petroleum. In eastern states, refining capacity is forecast to increase more rapidly than demand, but these states remain far short of being able to supply their own requirements. Some restrictions on importing refined products were assumed to prevail in the future.

This study found that, without an offshore oil terminal, employment in refining and petrochemicals would decline or stagnate. Just as it is true that an offshore oil port would stimulate employment growth in Louisiana, it is also true that a cessation of growth in refining and petrochemicals would exert a depressing influence on the Louisiana economy.

No present jobs would be cancelled or replaced because of an offshore oil terminal. The volume of non-petroleum products moving across Louisiana docks would continue to grow. The movement of refined petroleum products from Louisiana to the Midwest and to the East Coast by water would grow *only* if an offshore oil port is constructed. This movement requires an increased supply of crude oil for Louisiana refineries, which would be made possible by an offshore oil port.

Transportation cost savings (at $1.40 per long-ton) that can be realized from the use of an offshore oil port are large:

Throughput Volume	1980	1990	2000
Total			
In thousands of long-tons per year	131,678	234,965	364,589
In thousands of barrels per day	2,565	4,577	7,102
To Louisiana Refineries			
In thousands of long-tons per year	49,950	100,927	152,879
In thousands of barrels per day	973	1,966	2,978
Total Transportation Cost Savings (000)	$184,343	$328,942	$510,410
To Louisiana (000)	$ 69,928	$141,293	$214,024

Only transportation costs savings on crude used in Louisiana refineries were counted as a benefit for Louisiana in this study, although they are less than half of total transport benefits accruing. Transportation benefits shown for Louisiana assume a slow decline in crude oil production in the state. If crude output remains level, requirements for imported crude and transportation cost savings would be reduced by approximately 30 percent.

To summarize the impact of an offshore oil terminal on the economy of Louisiana, a benefit-cost analysis was conducted. Costs inserted into the benefit-cost calculation include all initial capital costs associated with the offshore oil port, the shoreside terminal, and the pipeline connection to St. James Parish. Indeed, these were inserted again after 1985 to accommodate the forecasted growth in throughput. Operating costs applicable to crude destined for Louisiana refineries was also entered in the cost ledger. The final cost items considered consist of capital and operating costs borne by state and local governments. These costs are incurred in the provision of public services for the population growth accompanying the projected expansion in employment.

After considering all benefits and the cost items noted for every year until year 2000, the project team found that the present value of the benefit streams outweighed those for costs 5.36 to 1. It can be concluded that if costs are viewed as an "investment," benefits to Louisiana are more than five times larger.

Another benefit-cost ratio was calculated with the assumption that requirements for imported crude oil would be reduced by a leveling, rather than a decline, in the output of domestic Louisiana crude. In this instance, employment and income expansion attributable to an offshore oil terminal and transport cost savings were reduced, as were cost items. It was found that a benefit-cost ratio of 4.47 to 1 resulted.

The offshore oil port was also viewed entirely from the vantage point of state and local governments in Louisiana. It was found that for every dollar required to provide public services (such as roads, schools, waste treatment facilities, police and fire protection, and other services) total tax revenues of $1.09 could be anticipated. The benefit-cost ratio in present value terms was 1.09 to 1.

III ANALYSIS OF PETROLEUM DEMAND AND SUPPLY BALANCES

Introduction

The rapid increase in U.S. energy requirements during the past two decades has focused widespread attention on the specter of a national energy crisis. Awareness of the problem first developed during the 1955-1960 period, when energy usage in the United States increased at an average annual rate of 2.3 percent, and became even more pronounced during the next decade, when the average annual increase rose to 3.6 percent (1961-1965) and then to 4.8 percent (1966-1970). Projections now indicate that within the near future the gross consumption of energy in the United States will far exceed domestic supplies.

Four recent estimates of total U.S. energy requirements for selected future years appear in Table 1. Two were made by the U.S. Department of the Interior (USDI); and two, by the National Petroleum Council (NPC). It is evident that the December 1972 projections by the USDI represent a significant downward revision from estimates published by the USDI during January 1972. Furthermore, the most recent USDI forecasts are approximately six to seven percent lower than the "medium" estimates of the NPC.

In this chapter, the December 1972 set of forecasts from the USDI are used as a general guideline within which regional forecasts were developed. In assessing the impact of an offshore oil port on the economy of Louisiana, the project team chose to begin with a set of conservative projections.

The USDI forecasts in Table 1 are based on a projection of per capita consumption of gross energy in the United States (Fig. I). (The gross concept is employed by the USDI to include conversion losses occurring in the electric and synthetic gas sectors.) As indicated in Fig. I, per capita energy consumption in the United States, already the highest in the world, is expected to double within the next 30 years--from 329.1 million BTUs in 1970 to 686.1 million BTUs in the year 2000.

Table 1

TOTAL U.S. ENERGY REQUIREMENTS FOR SELECTED FUTURE YEARS
(In Quadrillion BTUs)

	1975	1980	1985
USDI, December 1972[a]	80.265	90.020	116.630
USDI, January 1972[b]	85.612	--	133.396
NPC, December 1972[c]			
Low	--	95.700	112.500
Medium	--	102.600	124.900
High	--	105.300	130.000
NPC, November 1971[d]	83.481	102.581	124.992

Sources: [a] *United States Energy Through the Year 2000*, U.S. Department of the Interior, December 1972.

[b] *United States Energy, A Summary Review*, U.S. Department of the Interior, January 1972.

[c] *U.S. Energy Outlook*, National Petroleum Council, December 1972.

[d] *U.S. Energy Outlook, An Initial Appraisal, 1971-1985*, National Petroleum Council, November 1971.

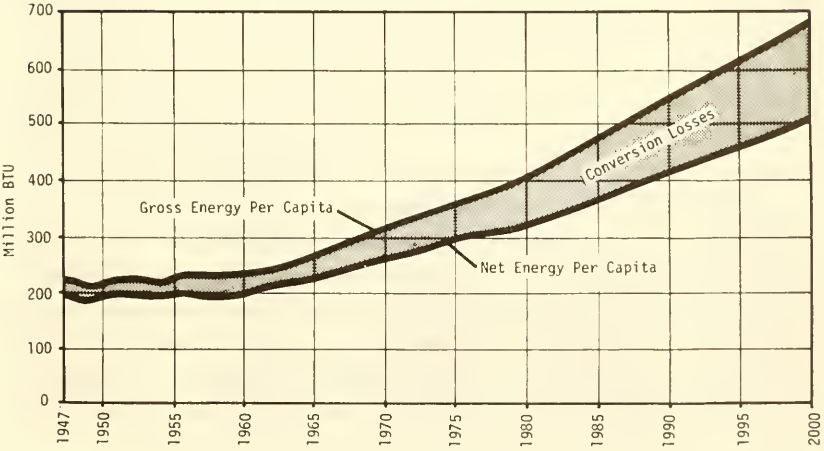

Fig. I U.S. NET AND GROSS ENERGY INPUTS PER CAPITA (1947-2000)
(Millions of BTUs)

The USDI projections of energy consumption by major consuming sector are included in Table 2 and Fig. II, and projections of U.S. energy requirements by source of supply are shown in Table 3 and Fig. III. The former table indicates that the largest overall increase in energy consumption during the next 30 years will be in the electrical generation sector. Ultimately, energy consumed in this sector will be redistributed to final users in the household and commercial sector and the industrial sector. The largest increase in energy output during the same period will occur in nuclear power, which is projected to increase 1,200 percent (Table 3). During the same period, energy output from coal and petroleum is projected to increase 249 percent and 236 percent, respectively. Throughout the period, petroleum will remain the single most important source of energy in the United States, although its contribution will decrease somewhat--from 44 percent of the total U.S. energy output in 1971 to 37 percent in the year 2000.

As indicated in Table 4, however, there is some variance among projections regarding future petroleum requirements of U.S. consumers. Part of this variance is due to differences in the assumed level of total energy requirements. The remainder is due largely to differences in assumptions concerning the price and availability of petroleum relative to other sources of energy. For example, the Case I NPC forecast of December 1972 is based on very optimistic assumptions concerning supplies of coal, natural gas, and nuclear energy, including resolution of environmental controversies, availability of governmental land for energy resource development, adequate price and tax incentives, and a high degree of success in locating undiscovered resources. Case II is based on less optimistic assumptions regarding energy sources competing with petroleum, but these, nevertheless, are more favorable than factors presently influencing energy supplies. Case III, considered the most likely outcome, is based on the assumption that present policies and trends will continue. Case IV is based on the assumption that there will be a sharp reduction in the availability of fuels other than petroleum and that the highest level of petroleum imports will be required.

Table 2

CURRENT AND PROJECTED ENERGY CONSUMPTION IN THE UNITED STATES BY CONSUMING SECTOR
(In Millions of BTUs)

Sector	1971*	1975	1980	1985	2000
Household and Commercial	14,281	15,935	17,500	18,960	21,920
Industrial	20,294	22,850	24,840	27,520	39,300
Transportation	16,971	19,070	22,840	27,090	42,610
Electrical Generation	17,443	22,410	29,970	40,390	80,380
Synthetic Gas	--	--	870	2,670	7,690
Total	68,989	80,265	96,020	116,630	191,900

*Actual.

Source: *United States Energy Through the Year 2000*, U.S. Department of the Interior, December 1972.

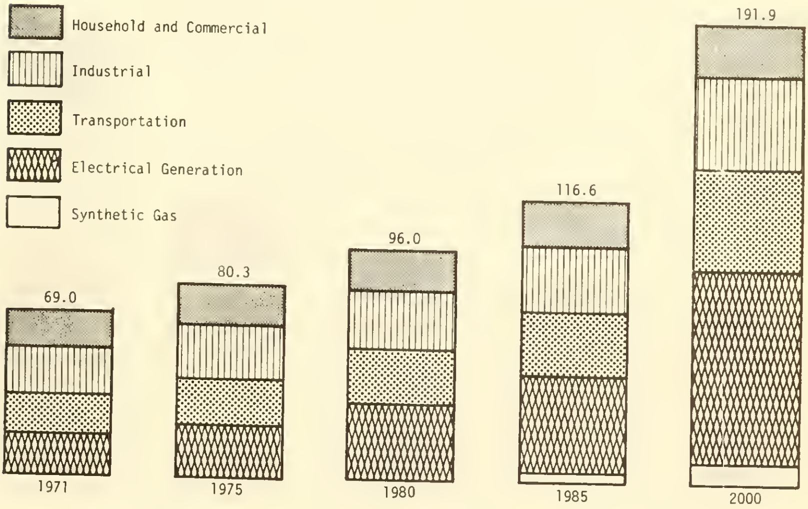

Fig. II U.S. ENERGY CONSUMPTION BY SECTOR (1971-2000)
(Quadrillion BTUs)

Table 3

CURRENT AND PROJECTED U.S. ENERGY REQUIREMENTS, BY SOURCE OF ENERGY
(in Millions of BTUs)

Energy Source	1971*	1975	1980	1985	2000
Coal	12,560	13,825	16,140	21,470	31,360
Petroleum	30,492	35,090	42,190	50,700	71,380
Natural Gas	22,734	25,220	26,980	28,390	33,980
Nuclear Power	405	2,560	6,720	11,750	49,230
Hydropower	2,798	3,570	3,990	4,320	5,950
Total	68,989	80,265	96,020	116,630	191,900

*Actual.

Source: *United States Energy Through the Year 2000,* U.S. Department of the Interior, December 1972.

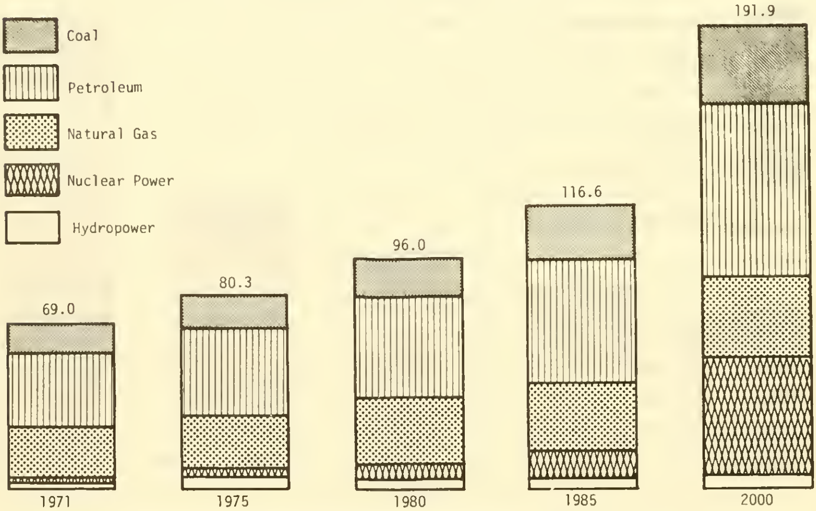

Fig. III U.S. ENERGY CONSUMPTION BY SOURCE (1971-2000)
(Quadrillion BTUs)

Table 4

U.S. DEMAND FOR PETROLEUM IN 1971 AND SELECTED FUTURE YEARS
(In Millions of Barrles a Day)

	1971	1975	1980	1985	2000
USDI, December 1972[a]	15.1	17.4	20.9	25.0	35.6
USDI, January 1972[b]	--	17.9	--	23.6	32.8
NPC, December 1972[c]					
Case I	--	17.4	19.6	20.5	--
Case II	--	17.6	20.5	23.1	--
Case III	--	18.3	22.3	25.8	--
Case IV	--	19.3	25.3	29.7	--
NPC, November 1971[d]	--	18.3	22.3	26.0	--

Sources: [a] *United States Energy Through the Year 2000.* U.S. Department of the Interior, December 1972.

[b] *United States Energy, A Summary Review,* U.S. Department of the Interior, January 1972.

[c] *U.S. Energy Outlook,* National Petroleum Council, December 1972.

[d] *U.S. Energy Outlook, An Initial Appraisal, 1971-1985,* National Petroleum Council, November 1971.

Development of Petroleum Demand and Supply Balances

During the study, regional petroleum and supply balances were developed for three of the five Petroleum Administration and Defense (PAD) Districts in the United States. One of these districts (PAD I) includes 16 East Coast states from Maine to Florida; the second (PAD II) includes 15 mid-continent states; and the third (PAD III) includes the six Gulf coast states of New Mexico, Texas, Arkansas, Louisiana, Mississippi, and Alabama. Balances for these three districts were based on regional demand projections published in the NPC study of November 1971. The three regional demand forecasts, in turn, were modified to conform to the total U.S. petroleum demand requirements published by the USDI in December 1972.

In general, these regional supply and demand balances were developed to establish the current and future reliance of the mid-continent states (PAD II) and the East Coast states (PAD I) on Gulf coast (PAD III) suppliers of petroleum. Specifically, these balances were developed to determine:

1. Current volume of crude oil and refined petroleum products moving from PAD III to PAD I and II
2. Future volume of crude oil and refined petroleum moving from PAD III to PAD I and II
3. Projected throughput volume of imported crude through a Louisiana offshore oil terminal

The first step in constructing the balances was to determine regional demand, and the second step was to determine the origin of crude and refined products moving into each district from other districts. Petroleum demand growth rates for the three PAD districts are included in Table 5. The upper portion of the table shows the annual growth rates implied by the November 1971 NPC forecasts, and the lower portion indicates the modified growth rates, which were used in constructing the demand and supply balances included in this study. The original NPC forecasts were reduced using USDI estimates for the 1971-1975 and 1976-1980 periods, since data from the Bureau of Mines (USDI) indicated that petroleum demand was not increasing as rapidly as projected by NPC. For the 1971-1975 period, the reductions range from two-tenths to six-tenths of a percentage point for the three districts. The USDI forecasted annual growth rate for the United States, however, is only three-fourths as large as the NPC figure (3.4 percent, compared to 4.5 percent). For the 1976-1980 period, the adjustment lowered the NPC annual growth rates by .2 percent, in line with the difference between the USDI and NPC forecasted annual growth rates for the entire nation. The NPC forecasts were not altered for the 1981-1985 period; and after 1985, the USDI national growth rate of 2.4 percent per year was used for all PAD districts.

Table 5

AVERAGE ANNUAL PERCENTAGE GROWTH IN PETROLEUM DEMAND FOR THE UNITED STATES AND PAD DISTRICTS I, II, AND III

PAD District	Actual	NPC Projection[a]			
	1965-1970	1971-1975	1976-1980	1981-1985	1986-1990
I	5.5	4.9	3.8	2.7	--
II	4.4	3.9	3.8	2.8	--
III	5.5	4.6	4.3	3.6	--
U.S.	5.0	4.5	4.0	3.1	--
			Modified Projection[b]		
	1965-1970	1971-1975	1976-1980	1981-1985	1986-2000
I	--	4.5	3.6	2.7	2.4
II	--	3.7	3.6	2.8	2.4
III	--	4.0	4.0	3.6	2.4
U.S.	--	3.4	3.8	3.7	2.4

[a] November 1971.

[b] Based on USDI December 1972 forecast for the United States.

The projected annual growth in refining capacity for each of the three PAD districts and for Louisiana is shown in Table 6. These data indicate that PAD District III has the largest refining capacity for each of the years 1970 to 2000, and that, by the year 2000, this capacity will have increased to 13,162 thousand barrels a day, a 173 percent increase over the 1970 figure of 4,825.8. On an annual basis, the largest increases for PAD III are projected to occur during the years 1976-1980 (5.8 percent) and 1981-1985 (3.5 percent). Prior to 1975, however, PAD III capacity is projected to increase only 1.9 percent annually, in contrast to 4.0 percent for PAD II and 4.4 percent for PAD I.

Table 6

PROJECTED ANNUAL GROWTH IN REFINING CAPACITY FOR PAD DISTRICTS I, II, AND III
(In Thousands of Barrels Per Day)

PAD District	Refining Capacity							
	1970	1971	1972	1975	1980	1985	1990	2000
III	4,825.8	5,227.2	5,462.7	5,777	7,652	9,088	10,383	13,162
(Louisiana)	(1,257.4)	(1,307.5)	(1,481.6)	(1,568)	(2,134)	(2,606)	(3,040)	(3,949)
II	3,226.5	3,492.7	3,470.1	3,902	4,658	5,348	6,021	7,633
I	1,473.2	1,501.4	1,528.5	1,740	2,850	4,000	4,520	5,709
PAD District	Annual Percentage Growth Rates							
				1972-1975	1976-1980	1981-1985	1986-1990	1991-2000
III	--	--	--	1.9	5.8	3.5	2.7	2.4
(Louisiana)	--	--	--	(1.9)	(6.3)	(4.0)	(3.2)	(2.6)
II	--	--	--	4.0	3.6	2.8	2.4	2.4
I	--	--	--	4.4	10.4	7.0	2.4	2.4

Source: H. J. Kaiser Company and Gulf South Research Institute.

Like PAD III, PADs I and II will experience substantial increases in refining capacity to the year 2000, although at a lesser absolute amount overall. Annual percentage growth rates for PAD II remain fairly constant throughout the period, but the annual rates for PAD I jump dramatically during the years 1976-1980 (10.4 percent) and 1981-1985 (7.0 percent).

A detailed discussion of the actual and projected demand and supply of petroleum for PAD districts I, II, and III and for Louisiana is presented on the following pages in both narrative and graphic form.

PAD I

The actual and projected demand and supply of petroleum for PAD I is shown in Table 7. As indicated, the demand for petroleum in the district will more than double between 1970 and 2000. In 1970, the primary sources of crude in the district were PAD III and imports. Only a very small amount was produced in District I for use in District I, and this amount is projected to become even smaller in the future. Shipments of crude into District I from PAD III are similarly projected to decrease steadily through time, from 651 thousand barrels a day in 1970 to 300 in the year 2000. Imported crude, on the other hand, will increase substantially in the future--from 579 thousand barrels a day in 1970 to 4,952 thousand barrels a day in 2000.

Data on crude runs is based on the refining capacity expansion shown previously in Table 6 for PAD I. Beginning in 1975, crude runs are assumed to represent 92 percent of refining capacity.

According to a December 1972 USDI publication entitled *Trends in Capacity Utilization,* 1,070 thousand barrels per day of additional refining capacity were scheduled for PAD I at the beginning of 1973. This was 94 percent of all expansions under consideration at the time. Although the USDI estimate includes projects currently blocked by environmental considerations, the data demonstrated industry interest as well as PAD I requirements for new refining capacity. Currently the East Coast accounts for more than 40 percent of the U.S. petroleum demand, but has less than 12 percent of the U.S. refining capacity. (Fig. IV indicates projected petroleum demand and refining capacity for the years 1980, 1990, and 2000 in PAD districts I, II, and III.)

Table 7

ACTUAL AND PROJECTED PETROLEUM DEMAND AND SUPPLY FOR PAD DISTRICT I
(In Thousands of Barrels Per Day)

	Actual		Projected				
	1970	1971	1975	1980	1985	1990	2000
District I Demand	5,894	6,078	7,237	8,637	9,868	11,110	14,084
Sources of Crude							
PAD I	36	40	35	35	30	20	--
PAD II	19	21	20	15	15	10	--
PAD III	651	567	558	510	473	405	300
(Louisiana)	(351)	(328)	(300)	(280)	(260)	(230)	(170)
Adjustment	5	12	--	--	--	--	--
Imports	579	691	988	2,062	3,162	3,723	4,952
Crude Runs	1,290	1,331	1,601	2,622	3,680	4,158	5,252
Sources of Refined Products							
PAD I	1,290	1,331	1,601	2,622	3,680	4,158	5,252
Adjustment	18	92	56	92	129	145	184
PAD II	31	88	100	100	100	100	100
PAD III	2,771	2,691	2,920	3,380	3,986	4,456	5,276
(Louisiana)	(693)	(675)	(759)	(978)	(1,160)	(1,300)	(1,524)
Imports	1,784	1,876	2,560	2,443	1,973	2,251	3,272
(Residual Fuel)	(1,471)	(1,531)	(2,100)	(2,300)	(1,800)	(2,100)	(2,800)
District I Supply	5,894	6,078	7,237	8,637	9,868	11,110	14,084

Source: H. J. Kaiser Company and Gulf South Research Institute.

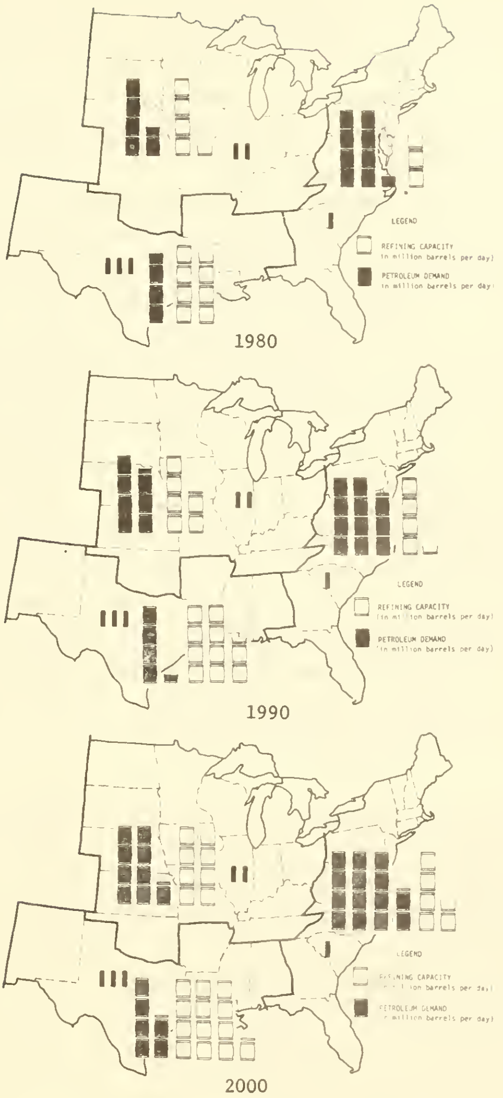
II
I
LEGEND
REFINING CAPACITY (in million barrels per day)
PETROLEUM DEMAND (in million barrels per day)
III
1980
II
I
LEGEND
REFINING CAPACITY (in million barrels per day)
PETROLEUM DEMAND (in million barrels per day)
III
1990
II
I
LEGEND
REFINING CAPACITY (in million barrels per day)
PETROLEUM DEMAND (in million barrels per day)
III
2000

Fig. IV PROJECTED REFINING CAPACITY AND PETROLEUM DEMAND FOR PAD DISTRICTS I, II, AND III (1980, 1990, AND 2000)

By implication, the demand and supply balance developed for PAD I means that the East Coast will require an offshore oil terminal capable of receiving crude from very large crude carriers (VLCCs). This assumption is based on the large volume of crude imports and on the fact that product imports are expected to consist principally of residual fuel oil, as is presently the case.

Sources of refined products for PAD I shown in Table 7 include the district's own refinery output, including the adjustment for refinery output in excess of crude runs. Upon advice of oil industry personnel interviewed, receipts of refined products moving from PAD III to PAD I were allowed to grow. By 2000, this volume is approximately double the 1971 level. It is assumed that most of this increase will move by pipeline, with an expansion of both the Colonial and the Plantation product pipelines running from PAD III to PAD II. It will be noted later, however, that coastline movements of refined products from the Gulf coast to the East Coast are sizable.

It should be kept in mind that Table 7 envisions no great change in present import policies that restrict or discourage imports of refined products other than residual fuel oil. If import restrictions were to be removed, it is expected that the movement of refined products from PAD III would diminish over time, and imported refined products would show large growth. In effect, the result would be the much discussed "export" of refining capacity to Caribbean locations.

PAD II

Table 8 indicates the demand and supply balance for PAD District II. Demand during the period 1970 to 2000 is projected to more than double--from 4,009 thousand barrels a day to 9,270. During this period, however, the amount of crude produced in District II for use in the district and shipments of domestic crude from PAD III are both projected to decline steadily. The tapered reduction in shipments from PAD III is the result, primarily, of an expected overall downward trend in District III production of crude petroleum (Fig. V). It was assumed that future supplies of low-sulphur crude produced in PAD III would be shared proportionately with other regions, as is now the case.

Table 8

ACTUAL AND PROJECTED PETROLEUM DEMAND AND SUPPLY FOR PAD DISTRICT II
(In Thousands of Barrels Per Day)

	Actual		Projected				
	1970	1971	1975	1980	1985	1990	2000
District II Demand	4,009	4,099	4,740	5,657	6,495	7,313	9,270
Sources of Crude							
PAD II	1,116	1,049	875	750	725	675	650
PAD IV	274	246	100	--	--	--	--
PAD III	1,454	1,559	1,380	1,240	1,200	1,160	975
(Louisiana)	(464)	(587)	(500)	(480)	(450)	(410)	(330)
Imports	310	376	1,235	2,295	2,995	3,705	5,397
(Canada)	(310)	(376)	(500)	(800)	(1,100)	(1,430)	(1,820)
(Other)	--	--	(835)	(1,495)	(1,895)	(2,375)	(3,677)
Crude Runs	3,154	3,230	3,590	4,285	4,920	5,540	7,022
Sources of Refined Products							
PAD I	120	120	100	100	100	100	100
PAD II	3,154	3,230	3,590	4,285	4,920	5,540	7,022
Adjustment	127	145	105	122	175	173	248
PAD III	534	533	720	850	900	1,100	1,400
(Louisiana)	(111)	(111)	(151)	(179)	(189)	(231)	(294)
PAD IV	21	21	20	--	--	--	--
Imports	53	50	205	300	400	400	500
(Canada)	(48)	(50)	(205)	(300)	(400)	(400)	(500)
District II Supply	4,009	4,099	4,740	5,657	6,495	7,313	9,270

Source: H. J. Kaiser Company and Gulf South Research Institute.

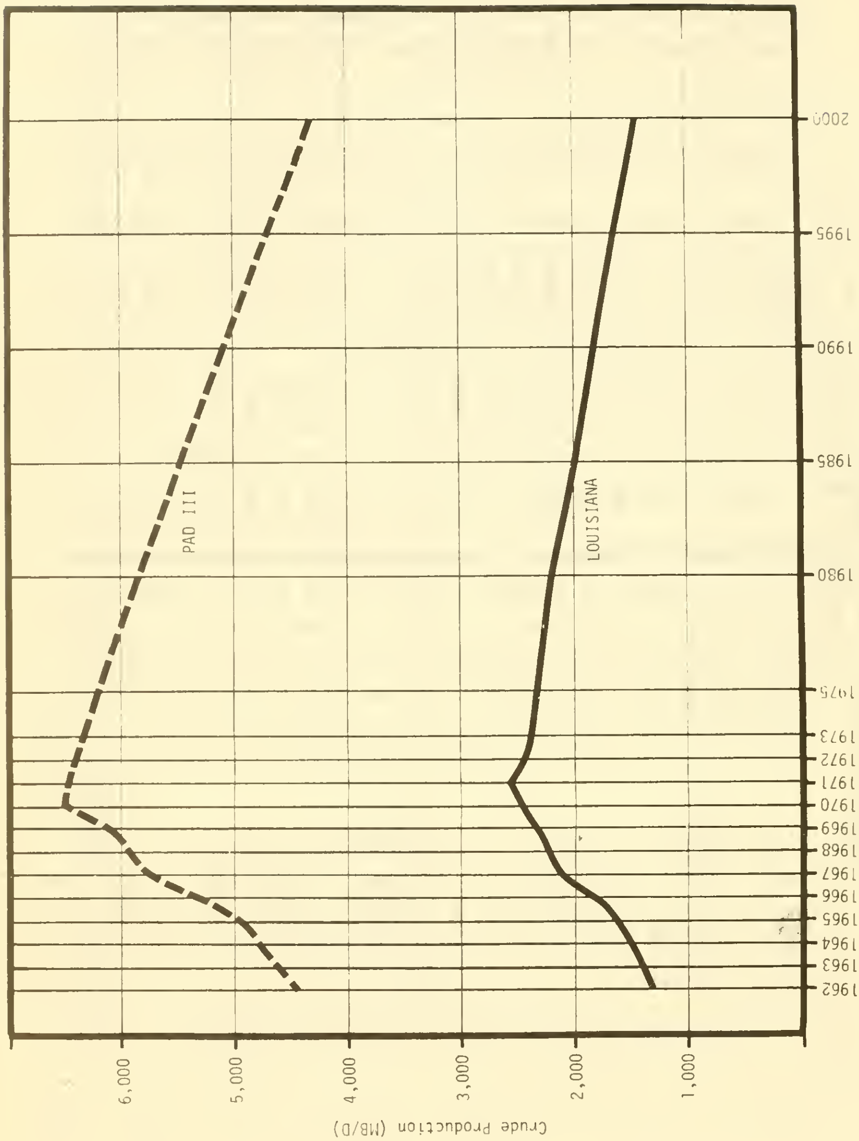

Fig. V PAST AND PROJECTED PRODUCTION OF CRUDE OIL AND CONDENSATE IN LOUISIANA AND PAD III

The decline in supplies from districts II and III will be offset by a large increase in total receipts of imported crude from Canada and other countries. In 1970, for example, imports into PAD II accounted for only 310 thousand barrels a day, but by the year 2000, this figure will have increased to 5,397 thousand barrels a day, of which 1,820 will come from Canada. [The District II share of imported Canadian crude was permitted to increase, since it was assumed that requirements for the west coast (PAD V) and mountain states (PAD IV) would be met principally by Alaskan crude. This assumption left an increasing percentage of Canadian crude available for PAD II, as shown in Table 9.]

Table 9

PROJECTED CRUDE IMPORTS FROM CANADA AND THE SHARE MOVING TO PAD II
(In Thousands of Barrels Per Day)

	1970	1971	1975	1980	1985	1990	2000
NPC, December 1972	--	--	1,300	1,920	2,750	--	--
Adjusted Estimate	766	--	1,300	1,775	2,000	2,200	2,600
Percent to PAD II	41	--	38	45	55	65	70
Volume to PAD II	317	376	500	800	1,100	1,430	1,820

Source: H.J. Kaiser Company and Gulf South Research Institute

Crude runs shown previously in Table 8 for PAD II are assumed to be 92 percent of projected refining capacity beginning in 1975. Refining capacity in PAD II, in turn, has been projected to increase at the same rate as petroleum requirements in PAD II. On the one hand, this means that PAD II will become no more self-reliant in terms of refined products than is currently the case. On the other hand, it means that refining capacity is not assumed to be "exported" to other PAD districts.

With total crude requirements (crude runs) determining refining capacity, imports from other than Canada were viewed as a residual balancing item. These would mainly be imports via the Capline running from St. James, Louisiana, to Illinois. In 1977 (the first full year for operating the Louisiana offshore oil terminal), all "other imports" shown in Table 8 would move through that terminal.

The sources of refined products in PAD II include that amount originating in PAD II, which is equal to crude runs. An "adjustment factor" allows refinery output to reflect approximately a 3.5 percent gain during refinery operations, as well as changes in stocks and other balancing items. Shipments of refined products into PAD II from the Gulf coast region (PAD III) are projected to grow moderately, with most of this growth accounted for by pipeline from Texas. A moderate growth is also forecast for imports from Canada, and these imports are expected to consist of natural gas liquids and residual fuel oil. The total of all available refined products is assumed to represent total supply and is equal to demand or PAD II requirements. A minor movement of refined products out of PAD II, including some to PAD III, has been omitted.

PAD III

The balance sheet of petroleum supply and demand for PAD III (Table 10) is, in many respects, significantly more complex than those for PADs I and II. As stated previously, the District III balance is integrally related to requirements of both crude and refined products in the other two districts.

The methodology used to develop the PAD III balance differs from that described previously. In this case, the project team began with the supply of crude produced in PAD III. As shown previously in Fig. IV, production of crude in District III is assumed to decline by about one-third by the year 2000. This decline matches the reduction forecast by the NPC in December 1972, after omission of natural gas liquids, and it also follows the recommendation of confidential industry sources.

It was noted earlier that supplies of PAD III crude are assumed to be shared with other districts; therefore movements of crude shown earlier in demand and supply balances for PADs I and II reappear in Table 10.

It is important to note that refinery expansion in PAD III is assumed to be slight until after 1975, at which time a spurt is forecast to occur (Table 6). It is reasoned that this will result from construction of two offshore oil terminals--one in Louisiana and one in Texas. It is also reasoned that refining capacity in PAD III would have to grow more rapidly than PAD III demand to reflect the decreased availability of natural gas liquids. Currently, these are added to refinery output at Gulf coast refineries and account largely for the "expansion factor" shown in Table 10. Expansion from addition of these liquids now amount to about 25 percent of refinery output. By the year 2000, they are expected to provide about five percent of the total refinery output.

In Table 10, the balancing item among sources of crude to supply required crude runs is "imports." It can be seen that in 1975 imported crude will exceed one million barrels per day. After 1976, this requirement will be met by use of offshore oil terminals in Texas and Louisiana.

The supply of refined products appearing in Table 10 consists of crude runs, plus the expansion factor. District III demand was projected as shown previously in Table 5, and is generally expected to grow at a more rapid rate than for the United States as a whole. This results from the assumption of a faster rate of economic growth in the Gulf coast area, as well as the substitution of petroleum for natural gas in the petrochemical industry and as a source of fuel at power-generating plants and at refineries themselves.

The disposition of refined products to PADs I and II shown in Table 10 was discussed previously in connection with the demand and supply balances struck for those districts.

Table 10

ACTUAL AND PROJECTED PETROLEUM DEMAND AND SUPPLY FOR PAD DISTRICT III

(In Thousands of Barrels Per Day)

Item	Actual		Projected				
	1970	1971	1975	1980	1985	1990	2000
District III Production of Crude	6,507	6,484	6,200	5,800	5,430	5,060	4,300
Shipments							
To PAD I	651	567	558	510	473	405	300
To PAD II	1,454	1,559	1,380	1,240	1,200	1,160	975
PAD III	4,402	4,358	4,262	4,050	3,757	3,495	3,025
Required Imports of Crude	-45	134	1,053	2,990	4,604	6,057	9,084
Crude Runs	4,357	4,492	5,315	7,040	8,361	9,552	12,109
Expansion Factor	1,513	1,417	1,352	1,011	840	750	584
Supply of Refined Products	5,870	5,909	6,667	8,051	9,201	10,302	12,693
PAD III Demand	2,478	2,578	3,017	3,671	4,215	4,746	6,017
Surplus, To	3,392	3,331	3,650	4,380	4,986	5,556	6,676
PAD I	2,771	2,691	2,920	3,380	3,986	4,456	5,276
PAD II	534	533	620	850	900	1,100	1,400
PAD IV and V	87	107	110	150	100	--	--

Source: H. J. Kaiser Company and Gulf South Research Institute

Louisiana

Table 11 contains the balance sheet of the demand and supply of petroleum for the state of Louisiana. Using the methodology followed for PAD III, the project team first specified the anticipated trend of crude oil (and lease condensate) for Louisiana. As indicated previously in Fig. IV, production of crude in Louisiana is expected to have peaked before 1975 and to taper downward at an average annual rate of about 1.9 percent. Later, in the discussion relating to the range of throughput volumes for the Louisiana offshore oil port, an evaluation is made of the implication of a leveling, rather than a decline in crude output in the state.

The project team then considered the likely course of refinery growth in Louisiana, bearing a number of factors in mind. Historically, refining capacity has tended to locate "where the crude is." A correlation analysis between refining capacity and crude oil production for Louisiana revealed that the coefficient of correlation was .89. In essence, it could be said that 89 percent of the past growth in refining capacity in the state can be explained by the fact that crude oil production was expanding.

An offshore oil port is expected to exert a continuing, stimulating influence on refining capacity in Louisiana. Industry spokesman report that there are two principal reasons why refining capacity will continue to grow in areas where it is now located. First, environmental considerations block refineries from locating in areas where none now exists. Second, existing pipeline infrastructure connecting to product pipelines, to petrochemical plants, to storage and shipping terminals, and to other refineries can be found only where refineries are already located. Large amounts of capital are invested in these networks, and they are a vital factor in attracting new refining capacity.

Table 11

ACTUAL AND PROJECTED PETROLEUM DEMAND AND SUPPLY FOR LOUISIANA
(In Thousands of Barrels Per Day)

Item	Actual		Projected				
	1970	1971	1975	1980	1985	1990	2000
Production of Crude	2,485	2,562	2,330	2,150	1,970	1,800	1,430
Shipments							
To PAD I	351	328	300	280	260	230	170
To PAD II	464	587	500	480	450	410	330
Net to Other PAD III States	471	519	460	400	380	330	275
Required Imports	42	75	371	973	1,518	1,966	2,978
Louisiana Crude Runs	1,157	1,203	1,441	1,963	2,398	2,796	3,633
Expansion Factor	525	452	343	313	244	225	175
Supply of Refined Products	1,682	1,655	1,784	2,276	2,642	3,021	3,808
Local Demand	669	696	814	1,027	1,222	1,420	1,805
Surplus							
To PAD I	693	675	759	978	1,160	1,300	1,524
To PAD II	111	111	151	179	189	231	294
Other	209	173	60	92	71	70	185

Source: H. J. Kaiser Company and Gulf South Research Institute

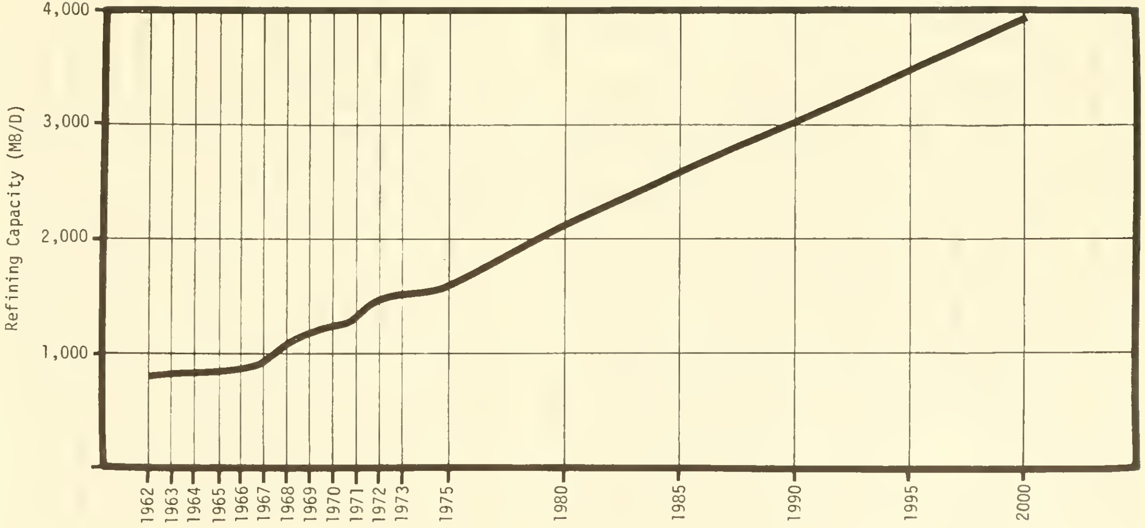

Fig. VI PAST AND PROJECTED GROWTH OF REFINING CAPACITY IN LOUISIANA

It can be observed from Fig. VI (and Table 6) that refining capacity in Louisiana is assumed to grow at annual rates of one-half of one percent higher than the growth rate for total capacity in PAD III. This occurs because refining capacity in Arkansas, New Mexico, and Alabama is assumed not to be stimulated by the construction of offshore oil terminals in Texas and Louisiana. The Louisiana share of total PAD III refining capacity is expected to increase from about 26 percent in 1973 to 30 percent by the year 2000.

The capacity growth line pictures in Fig. V were used to develop crude runs at 92 percent of that capacity, as shown in Table 11. Shipments of crude to PADs I and II, and the net movement from Louisiana to other PAD III states declines slowly, but in proportion to the expected reduction in Louisiana crude oil production.

The supply of refined products actually rises less rapidly than total refining capacity because of the reduced availability of natural gas liquids. These are blended directly into gasoline. Because of the expected reduced availability of natural gas liquids, the "expansion factor" drops from 31 percent in 1970 to less than five percent by year 2000.

The most difficult portion of the demand and supply balance to construct concerns the movement of refined products from Louisiana to PADs I and II. The Bureau of Mines of the USDI publishes annual data for the movement of refined products from the PAD III coastwise and by pipeline to PAD I. The Bureau also publishes data for refined products moving by pipelines and via the Mississippi River to PAD II. There is also a small river movement to PAD I. Beginning with these data, it was necessary to estimate what portion of PAD III total water movement could have originated in Louisiana. Data from the U.S. Army Corps of Engineers, reported in short-tons per year, was studied to determine origin ports. Movements of individual refined products were traced through successive portions of inland and intracoastal waterways to determine final destinations. The results of this study permitted assignment of volumes to individual PAD III states for products carried by water.

Table 12

ESTIMATED SHIPMENTS OF PETROLEUM FROM SELECTED PAD III STATES TO PADS I AND II IN 1971

(In Thousands of Barrels Per Day)

State	PAD I				PAD II			
	Water		Pipeline	Total	Water		Pipeline	Total
	Inland	Coastline			Inland	Coastline		
	Crude Petroleum							
Louisiana	0	331.8	0	331.8	47.5	0	540.1	587.6
Mississippi-Alabama	2.9	20.2	0	23.1	2.6	0	0	2.6
Texas	.4	213.5	0	213.9	0	0	844.2	844.2
Total	3.3	565.5	0	568.8	50.1	0	1,384.3	1,434.4
	Refined Products							
Louisiana	39.7	271.9	356.4	668.0	111.4	0	0	111.4
Mississippi-Alabama	17.1	44.7	64.3	126.1	14.1	0	0	14.1
Texas	8.3	968.2	920.4	1,896.9	90.8	0	316.7	407.5
Total	65.1	1,284.8	1,341.1	2,691.0	216.3	0	316.7	533.0

Source: Estimates are based on shipment data published by the U.S. Army Corps of Engineers and the Bureau of Mines of the USDI.

Table 13

PERCENT DISTRIBUTION OF SHIPMENTS OF PETROLEUM FROM SELECTED PAD III STATES TO PADS I AND II IN 1971

State	PAD I				PAD II			
	Water		Pipeline	Total	Water		Pipeline	Total
	Inland	Coastline			Inland	Coastline		
Crude Petroleum								
Louisiana	0	58.33	0	58.33	3.31	0	37.65	40.96
Mississippi-Alabama	.52	3.55	0	4.07	.18	0	0	.18
Texas	.06	37.54	0	37.60	0	0	58.86	58.86
Total	.58	99.42	0	100.00	3.49	0	96.51	100.00
Refined Products								
Louisiana	1.48	10.10	13.24	24.82	20.90	0	0	20.90
Mississippi-Alabama	.64	1.66	2.39	4.69	2.64	0	0	2.64
Texas	.31	35.98	34.20	70.49	17.04	0	59.42	76.46
Total	2.43	47.74	49.83	100.00	40.58	0	59.42	100.00

Source: Estimates are based on shipment data published by the U.S. Army Corps of Engineers and the Bureau of Mines of the USDI.

There is no pipeline movement of refined products from Louisiana to PAD II at the present time, so all was assigned to other PAD III states. Pipeline movement of products from PAD III to PAD I via the Colonial and Plantation pipelines was eventually allocated to PAD III states on the basis of refining capacity (tables 11 and 12). It was found that a percentage allocation by this manner differed very little from an allocation based on pipeline capacity originating by state.

This procedure established the volume of refined products moving from Louisiana to PADs I and II and enabled completion of a petroleum supply and demand balance for Louisiana. The movement of refined products to PAD II from Louisiana increases but remains relatively small, as shown previously in Table 11. It is assumed that this remains a barge movement in future years. The Louisiana share of PAD III refined products moving to PAD II is assumed to increase from a present level of 25 percent to approximately 29 percent by year 2000, reflecting the relative gain expected for Louisiana refining capacity compared to total refining capacity in PAD III.

Projections of Throughput Volumes for the Offshore Oil Terminal

The demand and supply balances for PADs I, II, and III, and for Louisiana were used to estimate the throughput volume for the proposed Louisiana offshore oil terminal. The three principal requirements determining throughput volumes are:

1. Imported crude required in PAD II
2. Imported crude required in Louisiana
3. Imported crude required in Mississippi

Table 14 contains estimates of throughput volume, largely derived from the demand/supply balances. These medium estimates include the imported crude required by PAD III, the requirement of Louisiana and a volume assumed needed and sent to Mississippi. The latter is assumed to range from 11 percent of requirements in Louisiana in 1976 to 15 percent by year 2000. Inclusion of the Mississippi requirement yields a medium estimate for 1980 of 2,565 thousand barrels a day by 1980 and 3,598 by 1985. By year 2000, the volume is expected to increase to 7,102 thousand barrels a day.

Table 14

PROJECTED CRUDE THROUGHPUT VOLUME FOR LOUISIANA OFFSHORE OIL PORT
(In Thousands of Barrels Per Day)

Item	1977	1980	1985	1990	2000
PAD II	991	1,495	1,895	2,375	3,677
Louisiana Refineries	494	973	1,518	1,966	2,978
Sub-Total	1,485	2,468	3,413	4,341	6,655
Other PAD III Refineries	54	97	182	236	447
Medium Estimate	1,539	2,565	3,595	4,577	7,102
Medium Estimate	1,539	2,565	3,595	4,577	7,102
Adjustment for Leveling in Louisiana Crude Output	-126	-250	-430	-600	-970
Low Estimate	1,413	2,315	3,165	3,977	6,132
Medium Estimate	1,539	2,565	3,595	4,577	7,102
Variance in PAD II Demand	302	342	400	450	570
High Estimate	1,841	2,907	3,995	5,027	7,672

Source: H. J. Kaiser Company and Gulf South Research Institute

The low estimate was determined by altering the projection for crude oil production in Louisiana. If crude output is assumed to remain at current levels, the medium estimate is reduced as indicated in Table 14 to obtain a low estimate.

The high estimate allows for variance in imported crude requirements for PAD II. It was obtained by using the November, 1971 NPC petroleum demand forecast for PAD II. It, therefore, implies that refining capacity in PAD II increases by the amount shown. This would be difficult to achieve. Alternatively, the added requirement could be interpreted to mean lower than projected supplies of crude oil from Canada.

In summary, the data in Table 14 demonstrates clearly that an oil port offshore from Louisiana is required as rapidly as it can be completed.

IV IMPACT OF AN OFFSHORE OIL TERMINAL ON LOUISIANA EMPLOYMENT

Introduction

The construction of a Louisiana offshore oil port would directly affect employment in two goods-producing sectors: construction and manufacturing. Construction activities would involve the oil port itself, the on-shore terminal, and the pipeline connection to the Capline that carries crude from Louisiana to Illinois. Construction jobs for Louisiana citizens would also be created as a result of capacity expansions in refining and petrochemical manufacturing industries. These employment opportunities for construction workers would be made possible by added supplies of crude oil imported through the offshore oil terminal. The impact upon manufacturing would stem from operation of the added refining and petrochemical plants. Direct employment in the transportation industry would also increase as a result of operating the offshore oil terminal and related facilities.

Direct employment changes in the construction and manufacturing sectors would, in turn, induce indirect employment effects in services, government, and other non-goods-producing industries.

The impact of the offshore oil terminal upon petroleum refining and petrochemical production can be measured, in part, by analyzing what might occur should an oil terminal *not* be constructed offshore from Louisiana. Industry spokesmen indicate that if an oil terminal is not constructed offshore from Louisiana and one is built offshore from Texas, new refining capacity would not locate in Louisiana and that some existing capacity would either operate at less than full capacity or shut down. Present capacity is designed to handle "sweet" Louisiana crude and would have to be modified to run high-sulphur "sour" Middle East crude. It is estimated that production of crude in Louisiana will decline at an average annual rate of 1.9 percent. The reduction in refining capacity is assumed to occur at less than half this rate--.8 of one percent per year. Under this assumption, two refineries, each with a capacity of 150 thousand barrels per day would stop operating in Louisiana by year 2000, rather than incur the cost of converting their facilities to handle high-sulphur crude imported at a relatively high transport cost. In 1973 the cost of converting one refinery of this size from sweet to sour crude is estimated to be $50 million.[1] According to industry sources, this is equal to about one-fifth the cost of constructing a new refinery of this size designed to produce a maximum volume of gasoline.

In spite of this conversion cost, it is estimated that the policy of sharing crude proportionately with refineries outside Louisiana will require that between 400 and 500 thousand barrels per day of capacity (or about one-third of that continuing to operate in Louisiana) would have to be converted to handle sour crude in the 1975-2000 period. This sour crude could be received at a deep-draft terminal in Texas or a Caribbean port and transshipped to Louisiana.

Direct Employment Impact

The direct impact of a Louisiana offshore oil terminal is discussed in the following paragraphs of this chapter, in relation to petroleum refining, petrochemicals, construction, and the offshore terminal itself.

Refining

Historically, the trend in employment in petroleum refining in Louisiana presents an interesting paradox. It has exhibited a long-run tendency to decline, even while refining capacity was expanding; that is, the number of workers per 1,000 barrels of capacity per day has continued to decline, as indicated in the following tabulation prepared by H. J. Kaiser Company and GSRI:

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[1] *The Oil and Gas Journal*, April 9, 1973.

Year	Employees Per Thousand Barrels A Day
1961	16.4
1962	14.9
1963	13.9
1964	12.6
1965	12.1
1966	10.5
1967	10.5
1968	9.5
1969	8.6
1970	8.2
1971	7.9
1975	4.7
1976	4.7
1980	4.2
1985	3.7
1990	3.2
2000	2.5

There are several reasons why this situation has occurred and will continue to occur. First, new refineries being built are more highly automated than the industry average for existing plants. These new refineries average from 2.5 to 3.5 employees per thousand barrels of capacity per day. Second, some recently constructed refineries subcontract maintenance to the engineering firms which design and construct the refineries. Thus, maintenance employees are tabulated in service employment rather than in manufacturing. Finally, the integration of refining and petrochemical manufacturing makes it difficult to separate one from another. Recently, a new one billion pounds per year ethylene plant was announced by the Shell Oil Company for Norco, Louisiana. It will be operated by "100 refinery employees." For these and other reasons, data relating to employment in petroleum refining is probably understated and not wholly representative of actual employment.

Table 15 indicates the projected petroleum refining capacity in Louisiana, with and without the offshore oil terminal, and tables 16 and 17 contain data relating to employment in petroleum refining. (Table 16 indicates the estimated *net* addition to refining employment attributed to the offshore oil terminal, and Table 17 summarizes employment in petroleum refining in Louisiana, with and without an offshore oil terminal.) In summary, the offshore oil terminal is estimated to halt the long-run decline in petroleum refining employment and ultimately to raise it to levels of the early 1960s.

Table 15

PROJECTED PETROLEUM REFINING CAPACITY IN LOUISIANA WITH AND WITHOUT OFFSHORE OIL TERMINAL FOR SELECTED FUTURE YEARS
(In Thousands of Barrels Per Day)

	1972	1975	1976	1980	1985	1990	2000
With Offshore Oil Terminal	--	1,568	1,668	2,134	2,606	3,040	3,949
Without Offshore Oil Terminal	1,481.6	1,517	1,505	1,456	1,396	1,335	1,214
Net Gain	--	51	163	678	1,210	1,705	2,735

Note: The offshore oil terminal is assumed to begin operating in 1976 but to influence construction of new refining capacity before that date.

Source: H. J. Kaiser Company and Gulf South Research Institute.

Table 16

ESTIMATED DIRECT EMPLOYMENT CHANGE IN PETROLEUM REFINING DUE TO LOUISIANA OFFSHORE OIL TERMINAL

	1975	1976	1980	1985	1990	2000
Net Change in Refining Capacity Due to Offshore Oil Terminal	51	163	678	1,210	1,705	2,735
Employees Per MB/D of Refining Capacity	4.7	4.7	4.2	3.7	3.2	2.5
Employment Change	240	766	2,848	4,477	5,456	6,837

Source: H. J. Kaiser Company and Gulf South Research Institute

Table 17

EMPLOYMENT IN PETROLEUM REFINING IN LOUISIANA WITH AND WITHOUT AN OFFSHORE OIL TERMINAL

	1980	1990	2000
With Offshore Oil Terminal	12,300	12,800	14,300
Without Offshore Oil Terminal	9,500	8,300	7,500

Note: The "without" assumption assumes a ratio of 6.5 employees per MB/D capacity in 1980, and 6.2 for 1990 and year 2000.

Source: H. J. Kaiser Company and Gulf South Research Institute

Petrochemicals

Between 1965 and 1971, 6,300 new jobs were recorded in chemicals in Louisiana. The gain averaged 1,250 per year, with an average annual growth of 6.1 percent. This growth, however, has been based on the use of natural gas liquids for producing ethylene and propylene, the principal chemical intermediate hydrocarbons. The Shell Oil Company reports that 88 percent of Gulf coast ethylene production was based on natural gas liquids in 1970. The remaining 12 percent was based on heavy oil feedstocks, including naphtha. By 1980 significant changes will occur in the availability of raw materials for ethylene production. By that time, 50 percent of ethylene produced in the United States will still use natural gas liquids (ethane and propane), but the remaining 50 percent will have to use petroleum-based feedstocks. Between 1970 and 1980, use of heavy oils in production of ethylene and propylene is expected to increase from 130 million barrels per day to 780 million barrels per day in the United States. No new petrochemical plant utilizing natural gas liquids will be built in Louisiana. In addition, some existing plants will have to convert to heavy oils obtained from refineries.

If there is no offshore oil terminal constructed for Louisiana, it is believed that no additional growth in petrochemical capacity will occur in the state. In coming years, petrochemicals will locate where refining capacity is expanding, since new refineries will be designed to produce a larger amount of petrochemical feedstocks than is now required.[2]

Tables 18 and 19 show the expected growth in the production of major petrochemical intermediates in Louisiana if the offshore oil terminal is built. Without such a terminal, and with the decline in refining capacity postulated above, it is probable that future industry expansion would occur entirely outside Louisiana.

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[2] It is assumed that domestic heavy oil feedstocks will be more economical to use than imports even if restrictions on imports are lifted.

Table 18

PROJECTED PRODUCTION OF INTERMEDIATE PETROCHEMICALS IN LOUISIANA ASSUMING OFFSHORE OIL TERMINAL
(In Thousands of Barrels a Day)

Petrochemical	1972	1975	1980	1990	2000
Ethylene	5,100	7,200	10,800	19,330	34,600
Propylene	2,910	3,600	5,150	8,800	15,030
Benzene	920	1,140	1,638	2,800	4,780
Xylene	410	468	578	815	1,150
Toluene	625	712	884	1,240	1,750

Source: H. J. Kaiser Company and Gulf South Research Institute.

Table 19

ANNUAL GROWTH RATES FOR INTERMEDIATE PETROCHEMICALS IN LOUISIANA ASSUMING OFFSHORE OIL TERMINAL

Petrochemical	1972-1975	1976-1980	1981-2000
Ethylene	8.9	8.5	6.0
Propylene	5.5	7.5	5.5
Benzene	5.5	7.5	5.5
Xylene	3.4	4.3	3.5
Toluene	3.4	4.3	3.5

Source: H. J. Kaiser Company and Gulf South Research Institute.

Table 20 contains estimates of employment in chemical and allied products in Louisiana, with and without an offshore oil terminal. The "no offshore terminal" assumption is based on no growth in the portion of chemical employment, either directly relative to petrochemicals or to producing chemicals for use in refining petroleum. However, an estimated 20 percent of chemical employment is assumed to be making products for paper mills, metals industries, and other uses not related to either petrochemicals or refining. This segment of employment in chemicals is assumed to grow at a rate of four percent per year.

Table 20

ESTIMATED EMPLOYMENT IN CHEMICAL MANUFACTURING IN LOUISIANA WITH AND WITHOUT AN OFFSHORE OIL PORT FOR SELECTED FUTURE YEARS

	1970	1980	1990	2000
With an Offshore Oil Terminal	--	30,750	35,700	51,200
Without an Offshore Oil Terminal	23,600	24,200	25,400	28,300
Net Increase	--	6,550	10,300	22,900

Source: H. J. Kaiser Company and Gulf South Research Institute

A number of alternative ways were tested for projecting employment in chemicals. It was finally observed that the ratio of employment in chemicals to employment in refining had held constant between 1965 and 1971 when both were rising and that this relationship could continue to hold firm. For every job added in refining, there have been 2.3 jobs added in the chemical industry. This multiplier is assumed to hold in future years, even as the expansion of the chemical industry becomes more dependent on the expansion of refining capacity than has been true in the past.

It is believed that this method of estimating the growth in chemical employment is conservative on the low side. As estimated, the average annual increase in chemical employment directly related to the offshore oil terminal is 1.7 percent from 1980-1990, and 3.7 percent thereafter. A comparison of these rates with the expected change in production of key petrochemicals (Table 18) indicates they are substantially lower. It should be recalled, however, that the projected expansion in Louisiana refining capacity exceeds the rate of expansion in PAD District III. This assumption was made, and some of the expected growth in petrochemical intermediate products will be accounted for, by growth projected for petroleum refining.

Construction

The estimated number of construction jobs created for Louisiana workers when the offshore terminal and shoreside facilities are built is shown in Table 21. Although initial construction is assumed to be complete before 1977, the employment gain is calculated as if construction extended over a seven-year period, at a reduced average annual rate. The direct construction gain in the 1981-1990 period allows for an expansion in facilities of about 60 percent after 1985 (in 1972 dollars) to accommodate a continuing increase in crude throughput. Further expansion would have to occur after 1990, but this employment impact has not been estimated.

Table 21

ESTIMATED CONSTRUCTION EMPLOYMENT GAIN IN LOUISIANA FROM THE OFFSHORE OIL TERMINAL AND PIPELINE CONNECTION TO ST. JAMES

Item	1973-1980	1981-1990
Capital Expenditure in 1972 Dollars	$404,000,000	$240,000,000
Labor Component at 60 Percent	242,400,000	144,000,000
Divided Average Annual Construction Wage at $14,700 Equals Man-Years Employment	16,490	9,796
Average Annual Employment	2,356	980
Average Annual Construction Employment Gain in Louisiana	707	294

Source: Capital costs are based on preliminary estimates made by LOOP Inc., in a confidential initial feasibility study.

Table 22 contains an estimate of the direct employment gain from construction of new refining capacity in Louisiana. The estimate does *not* include any employment gain occurring from conversion of existing capacity from a "sweet crude" capability to a "sour crude" capability. As explained in Table 22, a net concept is utilized to allow for the change in refining capacity due to the constant improvement in technology assumed to occur at an overall rate of about four percent in every five-year period.

It is apparent that the high rate of expansion predicted for refining capacity in Louisiana in the 1976-1980 period will initially increase the average number of construction jobs by more than 7,000 per year. Only 30 percent of these are assumed filled by workers living in Louisiana.

A similar procedure was followed for petrochemical capacity. Table 23 presents this estimate. The data is based on the expected expansion of ethylene production only. It is assumed that growth in capacity for other major intermediates occurs either as a by-product of ethylene expansion or from enlargement of refining capacity. This assumption very likely understates the number of construction jobs that would be created by expansion in the petrochemical industry, but data deficiency prevents tracing the expansion in capacity in ethylene-using chemical plants following the increased availability of ethylene.

The Offshore Oil Terminal

According to a confidential feasibility study conducted by LOOP Inc., an offshore oil terminal and associated shoreside facilities are expected to employ 315 operating personnel initially before 1977. After 1985, a small increase in this number could be expected, since further expansion in offshore and shoreside facilities would be required to accommodate the continued growth in crude oil throughput.

Table 22

ESTIMATED CONSTRUCTION EMPLOYMENT GAIN IN LOUISIANA FROM PROJECTED ADDITIONS TO REFINING CAPACITY

Item	1975-1980	1981-1990	1991-2000
Total Increase in Refinery Capacity (MB/D)	617	906	1,343
Less Gain Due to Improved Technology (MB/D)	61	121	182
Net New Refinery Capacity (MB/D)	556	785	1,161
Construction Cost at \$1,600 per MB/D[a]	\$889,600,000	\$1,256,000,000	\$1,259,200,000
Construction Wage Component at 60 Percent[b]	\$533,760,000	\$ 753,600,000	\$ 755,520,000
Divided by Average Annual Construction Wage at \$14,700 Yields Man-Years Employment[a]	36,310	51,265	51,395
Average Annual Man-Years	7,262	5,126	5,139
Average Annual Construction Employment Gain in Louisiana at 30 Percent[a]	2,179	1,538	1,542

[a] Based on industry data.

[b] *Oil and Gas Journal*, January 29, 1973.

Source: H. J. Kaiser Company and Gulf South Research Institute

Table 23

ESTIMATED CONSTRUCTION EMPLOYMENT GAIN IN LOUISIANA FROM PROJECTED ADDITIONS TO PETROCHEMICAL CAPACITY

Item	1975-1980	1981-1990	1991-2000
Net Change in Ethylene Capacity (In Millions of Pounds)	4,700	8,530	15,270
Net Change in Ethylene Capacity (MB/D)	105	191	342
Construction Cost at $3,200 per MB/D*	$336,000,000	$611,200,000	$1,094,400,000
Labor Component at 60 Percent	$201,600,000	$366,720,000	$ 656,640,000
Divided by Average Annual Construction Wage at $14,700 Yields Man-Years Employment	13,714	24,947	44,669
Average Annual Employment	2,743	2,495	4,467
Average Annual Construction Employment Gain in Louisiana at 30 Percent	823	748	1,340

*Based on industry data. Other estimates assumed to be the same as for refinery construction.

Source: H. J. Kaiser Company and Gulf South Research Institute

Summary

Table 24 summarizes the number of employment opportunities directly created by construction and operation of a Louisiana offshore terminal and shoreline facilities, and the subsequent expansion in refining and petrochemical capacity. As indicated, a total of 13,400 jobs in Louisiana can be directly attributed to an offshore terminal by 1980. By 1990, the estimated direct employment increases reach 18,300, and by year 2000 the direct employment gain amounts to 36,200.

As will be explained in the next section of this study, the direct employment gains in goods-producing industries will be inserted into a set of employment projections for the Louisiana economy. This operation will calculate the expected changes in employment in services, transportation, government, and other major categories that indirectly will be created because of the presence of the offshore oil terminal and the development it spawns.

Table 24

ESTIMATED DIRECT EMPLOYMENT GAIN IN LOUISIANA
STEMMING FROM AN OFFSHORE OIL TERMINAL

Item	1980	1990	2000
Construction Employment			
Offshore Terminal	707	294	--
Refineries	2,179	1,538	5,142
Petrochemical Plants	823	748	1,340
Total	3,709	2,580	6,482
Operating Employment			
Offshore Terminal	315	--	--
Refineries	2,848	5,456	6,837
Petrochemical Plants	6,550	10,300	22,900
Total	9,713	15,756	29,737
Total Direct Employment Gain	13,422	18,336	36,219

Source: H. J. Kaiser Company and Gulf South Research Institute

Induced Employment Impact

This section describes induced changes in employment in Louisiana as a result of the offshore oil terminal, estimates population growth attributable to the increases in employment, and summarizes income gains generated as a result of the terminal. These topics are preceded by a discussion of the methodology used in determining these data.

Methodology

In September 1972, projections of economic activity were published for 173 economic areas in the United States by the Water Resources Council, Washington, D. C.[3] These regional projections covered population, and employment and income for major two-digit industries. They are called OBERS projections, which indicate that they were the product of a joint effort of the Office of Business Economics (now the Bureau of Economic Analysis) of the U.S. Department of Commerce and the Economic Research Service of the U.S. Department of Agriculture.

The OBERS projections were made for 1980, 1990, and the year 2000, starting with 1969 as a base year. They are intended to be used for regional planning purposes. The "central place theory" was utilized to delineate boundaries of the 173 areas. Each regional area has a city that functions as a hub around and within which economic activity concentrates. Louisiana contains four such areas (areas 138, 133, 132, and 139). Area 138, which includes Baton Rouge and New Orleans, encompasses a total of 23 Louisiana parishes and 13 Mississippi counties. Area 133 includes 18 parishes centered around Monroe; Area 132 contains nine parishes around Shreveport; and Area 139 includes Lake Charles and 14 surrounding parishes.

To obtain regional data, it was necessary for the OBERS group to start with projections for the entire United States. As explained in Volume 1 of the OBERS publication, national forecasts were first made for components of the gross national product. These projections were then converted into income originating for two-digit industries.

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[3] *OBERS Projections of Regional Activity in the United States.*, Vol. 1-5, Water Resources Council, Washington, D. C., 1972.

In working from national to regional projections, the OBERS model used a "shift-share" concept. This technique distinguishes a proportionate growth element between a region and the nation for each industry or income component. In addition, it was assumed that most factors influencing historical shifts in regional self-sufficiency regarding local service industries were assumed to continue. The regional projections further assumed that regional earnings per worker and income per capita tend to converge to the national average. Similarly, regional employment/population ratios will move toward the national ratio. Finally, it was assumed that workers will migrate to areas where job opportunities are expanding.

In this study, the projections for employment and the forecast of income originating by two-digit industries were respectively aggregated so that the four regional economic areas in Louisiana could be viewed as one region. The projections for 1980, 1990, and year 2000 for two manufacturing industries (chemicals and refining) were then "corrected" to conform to the "no offshore oil terminal assumption." As indicated previously, employment is forecast to decline for refining and to grow only slightly for chemicals under the "no offshore terminal assumption."

The final step was to insert into the projections for 1980, 1990, and year 2000 the employment gains calculated for refining, chemicals and construction that directly result from the assumed presence of an offshore oil terminal.

A computer program was devised that calculated the induced employment gains and induced income change for all other industries, given the specified increase in manufacturing and construction employment. These induced changes are based on the share of employment each two-digit industry has relative to total employment. Thus, when employment in one industry is increased, induced increases are calculated for other industries, while preserving a constant relationship between goods-producing and service industries. An exception was made for the military, which was assumed not to increase, regardless of changes assumed in refining, chemicals and construction.

Next, the changes in employment and in income calculated for the combined OBERS regions were reduced to eliminate the induced employment and income impacts applying to the 17 counties in Mississippi. An available OBERS population projection for the state of Louisiana was found to be 5.03 percent smaller than total population in the four-region area (including the 17 Mississippi counties) for 1980. The difference was 4.6 percent for 1990 and 3.8 percent for year 2000. On the basis of these differences, both the employment and income gains measured by the computer were reduced 4.8 percent for 1980, 4.2 percent for 1990, and 3.6 percent for year 2000 to eliminate gains assumed occurring outside Louisiana in the 17 counties in Mississippi. Thus, it was assumed that the income impact of increased employment in construction, refining, and petrochemicals would be higher per person in the state of Louisiana than in the 17 counties of Mississippi included in the original OBERS Area 138.

Induced Employment

The difference in the growth of total employment in Louisiana, with and without the offshore oil terminal, is given in Fig. VII. That difference consists of the direct employment changes already calculated, plus the induced changes in employment.

Table 25 summarizes the employment impact attributed to an offshore oil terminal. It is evident that the addition of 13,100 jobs in manufacturing and construction will create 21,970 other employment opportunities in Louisiana in other industries. The induced employment gain generated by the offshore oil port by 1980 is 2.677 times the direct employment gain. Because of changes in relative importance of major two-digit industries appearing in the original OBERS projections, this multiplier increases to 3.171 by 1990 and is calculated to be 3.107 in year 2000.

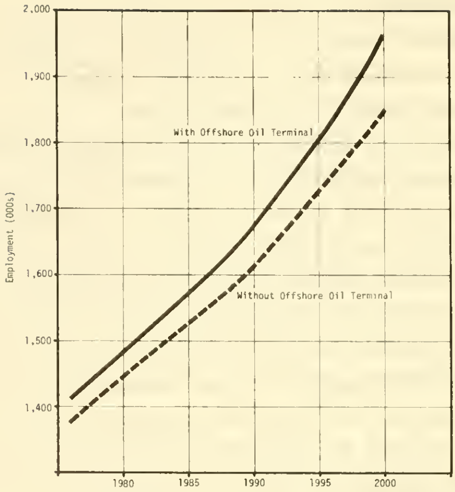

Fig. VII DIFFERENCE IN TOTAL LOUISIANA EMPLOYMENT, WITH AND WITHOUT THE OFFSHORE TERMINAL

Table 25

DIRECT AND INDUCED EMPLOYMENT GAINS GENERATED IN LOUISIANA BY AN OFFSHORE OIL TERMINAL

Item	1980	1990	2000
Direct Employment Gain			
Construction	3,700	2,600	6,500
Manufacturing			
Refining	2,800	5,400	6,800
Chemical	6,600	10,300	22,900
Total	13,100	18,300	36,200
Induced Employment	21,970	39,720	76,170
Total Net Gain	35,070	58,020	112,370

Source: H. J. Kaiser Company and Gulf South Research Institute

Projected Population Increases

In addition to providing estimates of induced employment, the program also produced estimates of population growth attributable to the increases in employment. The original OBERS projections assume a given rate of population growth in each of the four economic areas in Louisiana. A labor participation rate reflecting the ratio of total employment to total population is also assumed. A ceiling is imposed on the ratio so that if additions are made to employment, it is ultimately necessary to specify that additional population is attracted to Louisiana.

In 1980, the addition of 35,070 jobs is projected to cause an added population of 99,135 and a participation ratio of 35.4. By 1990, it is estimated that 162,443 would be added to the population, for an employment increase of 58,020. By year 2000, a population increase of 303,773 would be required for an employment gain of 112,370. Participation ratios of 38.7 and 37.0 were obtained for the years 1990 and 2000, respectively.

Income Gains Generated

The offshore oil terminal would have an income impact in the state of Louisiana that would correspond to the increase in employment. Table 26 summarizes the increase in wage and salary income attributable to development caused by the offshore oil terminal. Conversion from 1967 to 1973 dollars was accomplished by using the implicit deflator of gross national product of 1.2824. It is then seen that by 1980, the offshore oil terminal would add $480 million of wage and salary income in the state. By 1990, this figure will nearly reach $1 billion, and by year 2000, $2.4 billion.

Two other measures of the impact of an offshore oil terminal are available. It can be seen that by 1980, total wage and salary earnings in Louisiana would be increased 3.1 percent. By 1990, the

Table 26

THE IMPACT OF AN OFFSHORE OIL PORT ON INCOME IN THE STATE OF LOUISIANA*
(In Thousands)

Item	1980	1990	2000
Income (In 1967 Dollars)			
With Offshore Oil Terminal	$12,287,548	$18,207,962	$28,205,745
Without Offshore Oil Terminal	$11,913,276	$17,428,411	$26,324,233
Increase	$ 374,272	$ 779,551	$ 1,881,512
Increase (In 1973 Dollars)	$ 479,966	$ 999,697	$ 2,412,851

*Income in 1967 dollars was converted to 1973 dollars using the deflator that changes first-quarter gross national product for 1973 to 1967 constant dollars (1.2824).

Source: H. J. Kaiser Company and Gulf South Research Institute.

increase would be 4.4 percent; and by year 2000, seven percent. From another vantage point, it can also be said that by 1980 an offshore oil port would raise average annual income for every employed person in Louisiana by $68 (in 1973 dollars). By 1990, the offshore oil terminal would increase average annual income for employed workers in Louisiana by $117; and by 2000, $186 (in 1973 dollars). These data appear in Table 27.

Table 27

THE IMPACT OF AN OFFSHORE OIL TERMINAL ON AVERAGE ANNUAL EARNINGS PER WORKER
(In 1967 and 1973 Dollars)

Item	1980	1990	2000
With Oil Terminal			
Earnings (000)	$12,287,548	$18,207,962	$28,205,745
Employment	1,481,458	1,669,580	1,965,181
Average Per Worker	$ 8,294	$ 10,906	$ 14,353
Without Oil Terminal			
Earnings (000)	$11,913,276	$17,428,411	$26,324,233
Employment	1,446,090	1,611,617	1,852,808
Average Per Worker	$ 8,238	$ 10,814	$ 14,208
Average Increase			
In 1967 Dollars	$ 56	$ 92	$ 145
In 1973 Dollars	$ 72	$ 117	$ 186

Source: H. J. Kaiser Company and Gulf South Research Institute

V ESTIMATION OF TRANSPORTATION BENEFITS

Savings in transportation costs for imported crude oil are expected to be a major benefit accruing from use of the offshore oil terminal. In calculating these savings, the project team first defined the composition of such savings for the state of Louisiana. Benefits for Louisiana were defined to apply to imported crude processed in Louisiana refineries. It was concluded earlier that refining capacity in Louisiana would decline slowly if the offshore oil terminal were not constructed. It was also noted that a growing volume of refined products would be "exported" to other areas outside the state. All final consumers of petroleum products refined in Louisiana, thus, would ultimately benefit from the use of the offshore oil terminal.

The definition of transport benefits for Louisiana excludes crude oil imported for use in PAD II that will move via the Capline to Illinois. Transport benefits on this volume of crude clearly can be assigned to refineries, and ultimately to consumers, in PAD II.

In estimating transportation cost savings for Louisiana, the project team assumed that the next least costly method of importing crude oil into Louisiana would involve transshipment via a superport located in the Bahamas.[4] Table 28 indicates that the savings per long-ton would amount to $1.40.

Table 29 shows the calculation of transportation benefits from the use of the offshore oil terminal for Louisiana, for PAD II and for Mississippi. The sum of these three benefits equals total transport benefits realized from use of an offshore oil terminal.

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[4] Use of a Texas offshore terminal rather than one in the Bahamas was not considered since the volume moving would decline substantially, assuming a pipeline connection between Texas and Louisiana and the Capline terminal for movement of crude to Illinois.

Table 28

PETROLEUM TRANSPORT COSTS TO LOUISIANA
(In 1973 Dollars Per Long-Ton)

Transport Costs	From Rastanura, Persian Gulf	
	Via Offshore Oil Port	Via Freeport, Bahamas
Ocean Freight[a] (VLCC)	$7.56	$7.21
Transfer Charge[b]	.88	.57
Ocean Freight[c] (70,000 DWT vessel)	--	1.76
Extra Unloading Charge[d]	--	.30
Total	$8.44	$9.84

[a] Transport cost per ton assumed at 72.5 percent of world scale rate, reflecting use of one 500,000-DWT vessel for every four in the 250,000-300,000 DWT class.

[b] Industry source.

[c] Assumes construction of a new 55,000-DWT tanker at $16 million, amortized at 8.5 percent over 20 years and operated under foreign registry.

[d] *Feasibility of a North Atlantic Deep Water Oil Terminal,* Soros Associates, Inc. for U.S. Department of Commerce, July 1972.

Source: H. J. Kaiser Company and Gulf South Research Institute.

Table 29

ESTIMATED ANNUAL TRANSPORTATION BENEFITS[a]

(In Thousands)

Item	1977	1980	1985	1990	2000
Imports for PAD II Refineries (In Long-Tons)	50,934	76,748	97,282	121,923	188,763
Transport Savings[b]	$ 71,305	$107,443	$136,191	$170,688	$264,260
Imports for Louisiana Refineries (In Long-Tons)	25,283	49,050	77,928	100,927	152,879
Transport Savings	$ 35,395	$ 69,928	$109,096	$141,293	$214,024
Imports for Mississippi Refineries (In Long-Tons)	2,818	4,980	9,343	12,115	22,947
Transport Savings	$ 3,945	$ 6,972	$ 13,080	$ 16,961	$ 32,126
Total Savings	$110,645	$184,343	$258,367	$328,942	$510,410

[a] Volumes are medium estimates from Table 14 converted from thousands of barrels a day to long-tons per year.

[b] Calculated on the basis of $1.40 per ton (Table 28).

Source: H. J. Kaiser Company and Gulf South Research Institute

As indicated in Table 29, benefits for Louisiana would amount to $35,395,000 in 1977 if the offshore terminal were in operation that year. Another $71,305,000 in benefits would accrue to PAD II in 1977. These figures emphasize the urgency for completion of the offshore oil terminal as soon as possible. Benefits foregone from a single year's delay are seen to be very substantial.

In determining a benefit-cost analysis from the viewpoint of the citizens of Louisiana, the transport benefits shown in Table 29 for Louisiana will be used. These rise from $35,395,000 in 1976 to $69,928,000 in 1980. By 1990, they reach $141,293,000; and by year 2000, $214,024,000.

VI BENEFIT-COST ANALYSIS

Introduction

This chapter contains an analysis of the offshore oil terminal from the standpoint of benefits to the citizens of the state, as compared to the costs of such a facility. The principal benefits would stem from increased earnings generated by new jobs directly created in refining, and petrochemicals, and those induced in other manufacturing and in service industries. Other benefits would result from transportation cost savings on crude oil imported for processing in Louisiana refineries.

The cost of the terminal to citizens of the state was difficult to determine because of several conceptual problems. First of all, it is not yet known how the proposed offshore terminal and shoreside facilities will be financed. For the purposes of this study, it has been assumed that the offshore facilities, the pipeline to shore, and the terminal at the preferred site in Lafourche Parish will be financed by privately issued bonds, although tax-exempt revenue bonds could be used.[5] It is also assumed that the pipeline constructed to carry crude oil from the Lafourche terminal to the Capline at St. James Parish (and possibly to refineries along the Mississippi River) would also be privately financed. Debt service would be met by users of the facilities.

Thus neither the offshore terminal nor the on-shore facilities extending to the Capline would represent an obligation to citizens of Louisiana. For this reason, it is not imperative that either be included on the cost side of a benefit-cost calculation. In this analysis, the capital costs for all of these facilities *were* counted. Similarly, operating costs were included for crude oil moving to Louisiana refineries. The theoretical question was: *if* the offshore and pipeline facilities *were* financed and constructed by a state government agency, would benefits accruing to citizens of the state exceed capital and operating costs?

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[5] If revenue bonds were issued by a public authority to finance the offshore port, the port-to-shore pipeline and the onshore terminal, debt service could be met out of lease revenues paid by users of the facilities. No obligation would be created for Louisiana citizens.

A second major category of costs concerns the burden imposed on state and local governments as a result of projected increases in employment generated directly and indirectly by the offshore oil terminal. Added population would cause additional expenditures for construction of schools, streets, parks and recreation areas, police and fire protection facilities, water and waste disposal facilities, and other such infrastructures, which must be borne by either the state or local government. Such capital costs were estimated and were inserted into the cost side of the benefit-cost analysis.

Similarly, operating costs for these facilities were estimated for inclusion as a cost item. In summary, this assessment of the economic impact of an offshore oil terminal considers *all* costs engendered by construction and operation of that facility, plus public expenditures required to accommodate the added population attracted by the increase in employment opportunities.

In the final analysis, the question was: Do transportation cost savings and increased wage and salary incomes outweigh public and private costs associated with an offshore oil terminal?

Annualization of Benefits and Costs

To derive a benefit-cost ratio, both transport cost savings and earnings were "annualized;" that is, an annual value was obtained for each year during the period for which the offshore terminal was evaluated. As indicated in previous sections of this report, a time horizon that extends to year 2000 was assumed. It is expected that the offshore oil terminal will begin the first full year of operation in 1977. This means benefits were counted for years 1977 through 2000 (a period of 24 years). A time horizon of this magnitude was chosen, since it was reasoned that the longest lived portion of the offshore terminal is likely to have a physical life of 25 or more years.

Benefits were obtained for earnings and for transport savings for years 1980, 1990, and 2000. They were annualized by extrapolation between these points, with the assumption that any change occurring between or before these benchmark years occurs at a constant rate.

Annualization of costs presents a different problem. Capital costs for the offshore oil terminal and all facilities extending to the Capline terminal at St. James were viewed as they are financed, rather than as construction expenditures are made. That is, annual debt service for those facilities was inserted into the cost streams beginning January 1, 1974. For convenience, equivalent uniform annual debt services were assumed for all capital costs, including those for the offshore terminal, the pipeline to St. James, and infrastructure items borne by either state or local governments.

It is important to note that the medium estimate of throughput volume developed in an earlier chapter of this study indicated that capacity of the offshore terminal would have to double before year 2000. To meet this requirement, it was assumed that the original capital expenditures required to build the offshore terminal and the pipeline to St. James are duplicated, beginning in 1986. This assumption means that costs for construction of a second offshore oil terminal and a duplicate pipeline to St. James were included in the cost side of the benefit-cost ledger. The costs, however, make no allowance for inflation in future years after operation of the facilities begin. All future costs and benefits are in constant dollars, as is the case for benefits.

Interest Rate and Debt Service Criteria

In annualizing costs for insertion into the benefit-cost calculation, the project team assumed that bonds would be retired with equivalent uniform annual debt service over a 20-year period. An interest rate of 7.50 percent was used for bonds issued for construction of the offshore oil port, the pipeline, and the on-shore storage terminal assuming private non-tax exempt financing.[6] Similar debt service terms were assumed for the pipeline connection from Lafourche Parish to St. James Parish.

The Discounting Procedure

The process of annualizing gives a stream of dollar values for each item for each year for a maximum number of 24 years for benefits and 27 years for costs. It is recognized that a dollar in benefits or costs anticipated in year 1985, for example, has a 1973 value of less than a dollar. It, therefore, was necessary to convert to a present value, each stream of benefits stretching to year 2000 and each stream of costs. This was accomplished by a discounting procedure. In this analysis, a discount rate of six percent was used.

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[6] If these items were financed with tax-exempt revenue bonds issued by a public authority, an interest rate 1.5 to 2 percentage points lower could have been used in the analysis and higher benefit-cost ratios would have resulted.

As a result of the discounting process, a dollar in benefits (or costs) in year 1985 has a 1973 value of only 47.7 cents. Conversely, if 47.7 cents were invested and earned six percent interest compounded, it would be worth $1 in 1985.

After conversion of each annual amount for each stream of benefits and costs, it was possible to compare total benefits and total costs. If benefits were to exceed costs, net benefits would have a positive value. The ratio of benefits to costs was greater than one, and the project being evaluated is seen to generate more benefits over its life than costs expended.

The results of the annualization and discounting benefits appear in Table 30. Total benefits have a 1973 value of $10,237,198,000. Their value is 5.36 times greater than the 1973 value of costs, which total $1,908,991,000. Net benefits, therefore, would be $8,348,207,000. If a discount rate higher than six percent were used, both total costs and total benefits would have a lower present value. However, the benefit-cost ratio would not be altered significantly.

It can be concluded that all public and private costs associated with the offshore oil terminal are repaid fivefold, in terms of wages and salary income for Louisiana citizens and in terms of transportation savings on crude oil moving to Louisiana refineries.

It should be noted that the benefit-cost calculation in Table 30 reflects a throughput volume for the superport for Louisiana refineries that assumes a 1.9 percent per year decline in production of crude oil in Louisiana after 1975.

A benefit-cost calculation has also been performed assuming production of crude in Louisiana remains level, rather than declines. As indicated in Table 31, the present value of the stream of earnings attributable to the

Table 30

BENEFIT-COST SUMMARY FOR A LOUISIANA OFFSHORE OIL TERMINAL ASSUMING DECLINING PRODUCTION OF CRUDE OIL IN LOUISIANA*
(In Thousands)

Item	Present Value	
Benefits		
Wage and Salary Earnings		$ 9,084,623
Transportation Savings on Crude for Louisiana Refineries		1,152,575
Total Benefits		$10,237,198
Costs		
Offshore Oil Terminal		$ 650,679
Pipeline to Capline		139,073
Operating Costs for Offshore Terminal and Pipeline to Capline		679,783
Infrastructure Costs		
Capital Costs		
State	$ 7,923	
Local	25,940	
Total		33,863
Operating Costs		
State	141,471	
Local	264,122	
Total		405,593
Total Costs		$ 1,908,991
Benefit-Cost Ratio		5.36

*Based on crude throughput for Louisiana, medium estimate.

Source: H. J. Kaiser Company and Gulf South Research Institute

Table 31

BENEFIT-COST SUMMARY FOR A LOUISIANA OFFSHORE OIL TERMINAL ASSUMING A LEVEL PRODUCTION OF CRUDE OIL IN LOUISIANA*
(In Thousands)

Item	Present Value	
Benefits		
Wage and Salary Income		$6,329,257
Transportation Savings on Crude for Louisiana Refineries		802,999
Total Benefits		$7,132,256
Costs		
Offshore Oil Terminal		$ 643,188
Pipeline to Capline		127,737
Operating Costs for Offshore Oil Terminal and Pipeline to Capline		519,463
Infrastructure Costs		
Capital Costs		
State	$ 5,520	
Local	18,072	
Total		23,592
Operating Costs		
State	98,563	
Local	184,014	
Total		282,577
Total Costs		$1,596,557
Benefit-Cost Ratio		4.47

*Based on crude throughput for Louisiana, low estimate.

Source: H. J. Kaiser Company and Gulf South Research Institute

offshore oil terminal from direct and indirect employment gains and transportation cost savings are reduced significantly. Infrastructure operating and capital costs are reduced by a comparable margin of slightly less than 30 percent. In the case of capital cost for the offshore terminal and for the pipeline connecting the Lafourche Parish terminal to the St. James Parish terminal, changes were somewhat more complex. Initial capital costs are higher due to a longer construction period and a lower total volume of throughput, but the necessity to add capacity in later years is postponed.

Table 31 indicates that, in the case that crude production in Louisiana remains level, the benefit-cost ratio is 4.47. Net benefits are still large at $5,535,699,000, as the present worth of benefits amounts to $7,132,256,000 while total costs have a present volume of $1,596,557,000.

No benefit-cost ratio has been calculated for the high assumption of throughput for the offshore oil terminal. It may be recalled that the high estimate was interpreted to mean either a lower-than-estimated volume of imports from Canada, or a higher-than-estimated demand for petroleum, with a corresponding expansion in refining capacity in PAD District II. Either of these conditions would influence the benefit-cost calculation only in that the capacity of the offshore oil terminal and associated facilities would be larger, and initially construction employment in Louisiana would be slightly higher than for the low and medium estimates. However, refining capacity in Louisiana, petrochemical capacity and subsequent development that would follow are not changed by the high throughput estimate.

VII IMPACT OF THE OFFSHORE OIL TERMINAL ON GOVERNMENT COSTS AND REVENUES

Introduction

The state of Louisiana and local municipal and parish governments will incur costs in conjunction with the increase in population and industry attracted by a Louisiana offshore oil port. Of primary concern in this case are expenditures required to provide public services which are not paid for by the recipient of such services and which must be financed out of general revenues. On the other hand, state and local governments will accrue tax revenue from upgraded property usage and increases in income, profits, and retail and wholesale trade resulting from economic expansion stimulated by a Louisiana offshore oil port.

In this section, a benefit-cost analysis is calculated from the viewpoint of state and local governments. As explained in the previous chapter, both benefits (tax revenues) and costs (required expenditures) are annualized, discounted, and summed. If the present value of benefits exceed the present worth of discounted costs, the benefit-cost ratio is greater than unity, and the offshore oil terminal would be judged to be beneficial to the financial position of state and local governments.

The OBERS model, as described previously, calculated the population changes that would accompany the total direct and indirect employment gains. By 1980, with an employment/population participation ratio of .356, it is estimated that the population of the state will be 99,135 larger than if an offshore oil port were not constructed. By 1990, the figure would be 162,443, and by year 2000, 303,773. By extrapolation, annual amounts of population growth attributable to the offshore oil port were calculated for other years between 1977 and year 2000.

Capital Costs Borne by State and Local Governments

Two types of costs are incurred by state and local governments. These are capital costs for construction of buildings and physical plants (schools, roads, and waste treatment facilities); and operating and maintenance expenses. The assumption was made that if the user is charged directly for a service (e.g., water supply), in most instances the amounts charged will cover capital and operating costs. It was also assumed that both capital and operating costs are estimated for a level of service that would be provided to residents of an urban area, with all amenities consistent with a "comfortable standard of living."

Capital cost factors used in this analysis for state and local governments are shown in tables 32 and 33. Most are presented on a per capita basis. In arriving at per capita costs for capital costs, the project team obtained data from a number of sources, as indicated. When no specific per capita cost figure could be found for an item, estimates were derived from the expenditure that would be required to build the publicly financed facility in a new community of 50,000 people. In fact, the population assumed attracted by the creation of new jobs will be dispersed, but will largely be added in parishes where refining and petrochemical manufacturing already can be found.

Estimated capital costs incurred by the state of Louisiana are presented in Table 32. It is important to note that the per capita costs shown were applied against the incremental population gain calculated annually.

The same procedure was followed in using the capital cost items identified in Table 33 for local governments in Louisiana. Again, costs were applied to the net annual addition to total population resulting from the growth stimulated by the offshore oil port.

Table 32

STATE CAPITAL COSTS FOR INCREMENTAL ANNUAL POPULATION GAIN

Item	Per Capita Costs
Education	$ 2.05
Police	2.40
Administration Buildings	6.00
Libraries	2.00
Highways	55.30

Source: *Governmental Finances in 1970-1971,* U.S. Department of Commerce, Bureau of the Census, (October 1972).

Table 33

LOCAL CAPITAL COSTS FOR INCREMENTAL ANNUAL POPULATION GAIN

Item	Per Capita Costs
Education[a]	$13.75[b]
Police	10.10[b]
Fire	11.70[b]
Waste Treatment	50.00[c]
Parks	69.00[d]
Administration Buildings	38.70[b]
Libraries	13.80[b]
Highways	14.70[b]

[a] School requirements are based on the ratio of children in the elementary, junior high and high school age ranges to the total Louisiana population in 1970. In a city of 50,000 people this would require education facilities for 5,200 elementary school students; 2,950 junior high students; and 2,200 senior high students. It is assumed that 2,850 new college students per 50,000 population can be handled by existing college and university facilities.

[b] U.S. Department of Commerce, Bureau of the Census, *Governmental Finances in 1970-1971* (October 1972).

[c] Estimated by project team for per capita cost of new waste treatment plant for city of 50,000 people.

[d] Estimated by project team to meet requirement of population of 50,000 under the guidelines and recommendations of *The Community Builders Handbook*, Urban Land Institute (1968). The facilities include neighborhood play lots, playgrounds, community parks, and a major city-wide park.

Source: H. J. Kaiser Company and Gulf South Research Institute

State and Local Government Operating Costs

Per capita state and local government annual operating costs used in the study are shown in tables 34 and 35. These were applied each year to the net difference in the total population that could be attributed to development stimulated by the offshore oil port. Also, the data, as compiled by the U.S. Department of Commerce for the state of Louisiana, indicated which unit of government makes the expenditure. State funds allocated to local governments to meet a specific operating cost item would appear as a local expenditure.

Table 34

STATE OPERATING COSTS FOR
TOTAL NEW POPULATION

Item	Per Capita Cost
Local Schools	$ 2.60
Higher Education	54.08
Police Protection	3.80
Libraries	.30
Highways	27.70
Administration	6.80

Source: *Governmental Finances in 1970-1971*, U.S. Department of Commerce, Bureau of the Census, (October 1972).

Table 35

LOCAL OPERATING COSTS FOR
TOTAL NEW POPULATION

Item	Per Capita Cost
Local Schools	$127.40[a]
Institutions of Higher Education	1.10[a]
Police Protection	16.20[a]
Fire Protection	8.00[a]
Libraries	2.20[a]
Parks	2.50[b]
Highways	7.30[a]
Administration	13.20[a]

[a] *Governmental Finances in 1970-1971*, U.S. Department of Commerce, Bureau of the Census, (October 1972).

[b] Survey by GSRI of municipal park planners.

Source: H. J. Kaiser Company and Gulf South Research Institute

Revenues of State and Local Government

Tables 36 and 37 present estimates of tax revenues that are expected to accrue to state and local governments in Louisiana as a result of development stimulated by an offshore oil terminal. The project team was not able to separate taxes paid by levels of government.

In Table 36, it can be noted that estimates of income tax payments were based on 1973 average salaries provided for refining and petrochemical employees. Separate annual earnings were obtained for staff and operating personnel and for construction employees. Induced employment assumes an average annual income considerably lower. The income tax liability for employees in industries where job opportunities were "induced" was based on the annual median family income earned in Louisiana in 1970.

Table 36

TAXES PAID BY INDIVIDUALS

Item	Tax
Per Employee	
Income Taxes	
Refining Employees[a]	
29% Staff @ $14,200 Income	$140
71% Operators @ $10,250	61
Petrochemical Employees	
29% Staff @ $14,200 Income	140
71% Operators @ $10,250	
Induced Employment @ $7,530[b]	12
Sales Taxes[c]	
Income Level 1 @ $14,200 (Construction and Refining and Petrochemical Staff)	292
Income Level 2 @ $10,250 (Refining and Petrochemical Operators)	236
Income Level 3 @ $7,530 (Induced Employment)	188
Per Capita	
Property Tax[d]	$ 79
Automobile License Tags[e]	
Passenger Vehicles (68% of Total Population)	$3/year
Commercial Vehicle (21% of Total Population)	$5/year

[a] Incomes are industry estimates and income tables are based on the Louisiana state income tax standard deduction form.

[b] $7,530 is based on Bureau of Census 1970 Louisiana median family income.

[c] Sales taxes are based on the Louisiana sales tax exemption rates allowed under the federal income tax guidelines.

[d] *A Study of Louisiana Ad Valorem Tax and Property Tax Relief Fund*, Gulf South Research Institute (August 1972), p. 9. The average rate per tax unit is applied to each worker. The assumption is made that the worker owns a home or that the property tax on rent homes is passed on to the rentee.

[e] *Louisiana Automobile Accident Compensation Planning*, Gulf South Research Institute (April 1973), p. 41.

Source: H. J. Kaiser Company and Gulf South Research Institute

Table 37

COMPUTATION OF ANNUAL CORPORATE TAX REVENUES
(In Thousands)

Item	Franchise and Income	Sales	Power Use	Ad Valorem[a]	Total
Refinery[b] (150 MB/D capacity)	$442.6		$35.0	$ 265.2[c]	$ 742.8[c]
				$2,652.0[d]	$3,129.6[d]
Intermediate Chemical Plant[e] (1 billion pounds/ year capacity)	$971.8	$43.0	$25.8	$ 46.8[c]	$1,087.4[c]
				$ 467.5[d]	$1,508.1[d]

[a] Inventory taxes are not included.

[b] Industry source.

[c] During first ten years of industrial tax exemptions.

[d] After expiration of industrial tax exemption.

[e] Based on data from Public Affairs Research Council of Louisiana, Inc.

Source: H. J. Kaiser Company and Gulf South Research Institute

The sales taxes assumed paid by the number of employees in "direct" and "induced" jobs were based on the exemption allowed under the federal income tax guidelines. This estimating procedure was followed to avoid differences in rates that prevail for individual parishes.

Table 37 presents an estimate of corporate tax revenue that would accrue from the expansion of refining and petrochemical capacity projected previously in this study. Information from an industry source precluded separation of franchise, income and sales taxes paid (on purchased materials and supplies) estimated for a new 150-thousand-barrel-per-day refinery.

It is apparent that additional corporation tax liabilities would occur in industries where growth was indirectly stimulated by the direct investment noted. These have not been estimated. In particular, it is believed that downstream petrochemical investment by users of ethylene, propylene, and other intermediate petrochemicals could be two or three times as large as the direct investment tabulated in this study.

The Benefit-Cost Equation

Using the estimating procedures outlined in tables 32-36, the project team obtained annual estimates for years 1977 through 2000 for capital and operating costs for state and local governments. Annual revenue estimates were calculated as indicated in tables 37 and 38. Following the procedure described previously, the staff discounted the annual streams of revenues and costs, using a six percent rate to obtain present value. The results are shown in Table 38 for the medium throughput calculated for the offshore oil terminal. It is seen that the stream of revenues accruing from development stimulated by the offshore oil terminal exceeds costs by 1.09 to 1. Both were converted to present worth to permit comparison for a 24-year period.

Table 38

IMPACT OF AN OFFSHORE OIL PORT ON GOVERNMENT REVENUE AND EXPENDITURES
(In Millions)

	Present Value	
Revenues		
Individual	$194.3	
Corporate	284.9	
Total Revenue		$479.2
Costs		
Capital Costs		
State	$ 7.9	
Local	25.9	
Total		$ 33.8
Operating Costs		
State	141.5	
Local	264.1	
Total		405.6
Total Costs		$439.4
Revenue-Cost Ratio		1.09:1

Source: H. J. Kaiser Company and Gulf South Research Institute

The revenue-cost ratio at 1.09:1 is considered to be conservative on the low side because of additional corporate and business taxes that would accrue in industries outside refining and the manufacture of petrochemical intermediates.

CHAPTER 35. DEEP DRAFT HARBOR AND TERMINAL AUTHORITY [NEW]

Sec.
3101. Purpose.
3102. Definitions.
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3105. Duties of board; officers; rules; meetings; quorum.
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§ 3101. Purpose

A. It is the object and purpose of this chapter to provide for the creation of a political subdivision of the State of Louisiana, possessing full corporate powers, known as the Deep Draft Harbor and Terminal Authority, hereinafter referred to as the "authority", to promote, plan, finance, develop, construct, control, operate, manage, maintain and modify a deep draft harbor and termnial within the jurisdiction of said authority and in order to promote the economic welfare of its citizens, and to provide the necessary facilities for docking, loading and unloading of vessels carrying liquid or dry bulk and energy cargoes. It is hereby declared to be in the public interest that this Deep Draft Harbor and Terminal Authority be created as a political subdivision of the State of Louisiana.

B. It is further the object and purpose of this chapter:

1. To promote the economic industrial well-being of the existing port authorities of the State of Louisiana and to promote interstate, national and international trade for the State of Louisiana, its subdivisions and the area served by the Mississippi River and its tributaries, and to provide that exsiting ports take such steps individually and collectively to assure the maintenance of the economic well-being of each port authority, as well as the whole;

2. To promote the industrial and petrochemical base of the Mississippi valley region of the United States by providing adequate deep draft port facilities for the handling of the cargoes of deep draft vessels;

3. To promote, in addition to port operations, scientific, recreational, and all other uses of the deep draft harbor and terminal which shall be in the public interest;

4. To accommodate and plan for the technological innovations occurring in the worldwide and domestic shipping industry to increase efficiency and the flow of commerce through the deep draft harbor and terminal;

5. To protect environmental values and Louisiana's unique coastal marshland ecosystem through the adoption of an environmental protection plan;

6. To assert and protect Louisiana's economic, social and environmental interests in the development of any deep draft harbor and terminal outside the State of Louisiana where such development may have an impact upon the State of Louisiana;

7. The authority to constitute a political subdivision of the State of Louisiana and such functions exercised by the board empowered herein shall be deemed to be held as governmental functions of the State of Louisiana, as the exercise of the powers granted herein will, in all respects, be to the benefit of the people of the state, for the increase of their commerce and prosperity and for the improvement of their economic condition;

8. To assure that the authority shall not be required to pay any taxes or assessments on any property acquired or used by it under the provisions of this chapter or upon the income therefrom, and any bonds issued hereunder shall be serviced from the income of said facility and shall be exempt from taxation by the State of Louisiana, and by any municipal or political subdivision of the state.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ 3102. Definitions

For the purposes of this chapter, the following definitions shall apply:

(1) "Deep draft harbor and terminal" means a structure, or series of structures or facility of any type emplaced in coastal waters and designed to accommodate the cargo or passengers of deep draft vessels whose draft is greater than the depths of typical inland harbors and waterways commonly used by ocean going traffic during the first half of the twentieth century, including all those structures and facilities functionally related thereto and necessary or useful to the operation thereof whether landward or seaward of the main structure or facility itself.

(2) "Authority development program" means all the phases of growth and development through which the concept of a deep draft harbor and terminal may go, including but not limited to promoting the concept, raising funds to support the program, planning the uses of the facility, selecting a site for the physical facility and support facilities, designing the structures, constructing the facility and the support facilities, operating and maintaining the facility, expanding or renovating the facility, modification and retirement of the facility, and any other phases through which authority development may proceed.

(3) "Environmental protection plan" means a written document, prepared in conformity with this law, which shall be a regulation of the Deep Draft Harbor and Terminal Authority which establishes those steps to be followed to insure the protection of the environment throughout all phases of the authority development program.

(4) "Three deepwater ports" means the board of commissioners of the Port of New Orleans, the Greater Baton Rouge Port Commission and the Lake Charles Harbor and Terminal District.

(5) "Three directors" means the director of the Louisiana Wildlife and Fisheries Commission, the director of the Louisiana State University Center for Wetland Resources and the executive director as created herein.

(6) "Facility" means any structure or improvement actively used on a regular basis in waterborne commerce.

(7) "Coastal waters of Louisiana" means those waters extending three nautical miles from the coastline, or beyond to the extent of the jurisdiction of the State of Louisiana.

Nothing contained herein shall be construed to affect Louisiana's claim to its tidelands or the location of Louisiana's coastline as interpreted by the State of Louisiana.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ 3103. Jurisdiction; domicile

A. The authority shall have exclusive jurisdiction over the authority development program within the coastal waters of Louisiana. The jurisdiction of the authority shall not include or extend to the taking, control or operation of existing, proposed or future facilities of existing port authorities except by mutual agreement.

B. The authority shall have the right to acquire by lease or purchase waterbottoms inside and outside of the territorial limits of the State of Louisiana for use in the construction, operation or maintenance of the facilities functionally required, related, necessary or useful to the operation of the authority.

C. The domicile of the authority shall be in the city of New Orleans; however, by appropriate act of the board of commissioners the domicile may be relocated to an appropriate location within the structures and facilities constructed or acquired by the authority.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ 3104. Board of commissioners; qualifications; selection; terms; vacancies; compensation

A. The authority shall be governed by a board of commissioners consisting of nine members chosen on the basis of their demonstrated experience in civic leadership and their stature and ability to act effectively for the best interests of Louisiana.

B. All commissioners shall be appointed by the governor. Two shall be selected from a list of nominees submitted by Louisiana's three deepwater ports, with each deepwater port recommending two nominees.

Two shall be selected from each of the three Public Service Commission districts in the State of Louisiana.

One of the members selected from the three Public Service Commission districts shall be selected for his primary interest in protecting the unique coastal environment of Louisiana.

One member shall be selected from the state at large.

Once a final determination is made as to the location of the deep draft harbor and terminal, the first vacancy occurring on the board shall be filled by appointment of a resident of a parish in which, or offshore from which, the deep draft harbor and terminal is to be located. This appointment shall be from a list of three names to be submitted by the governing authority of the parish in which, or offshore from which, the deep draft harbor and terminal is to be located. If the deep draft harbor and terminal is located in, or offshore from, more than one parish, then the governing authority of each such parish shall submit to the governor a list of three names and from the lists so submitted the governor shall select said appointee.

C. Each of the nine commissioners shall serve a five year term, except the initial appointees.

A commissioner may not serve more than two consecutive five year terms on the board of commissioners.

The first nine appointments shall be for terms of one member for one year, two for two years, two for three years, two for four years, and two for five years. The governor shall exercise his discretion as to which nominees to appoint to the initial shortened terms. Thereafter, all commissioners appointed as herein provided shall serve five year terms.

D. All vacancies shall be filled for the unexpired term in the same manner as the appointment originally made, except as herein provided. A commissioner may be removed by the governor for just cause.

E. The members of the board of commissioners shall serve without compensation, but shall be reimbursed for travel expenses incurred in attending meetings; at rates and standards as promulgated by the American Automobile Association or a comparable recognized standard.

Added by Acts 1972, No. 444, § 1.

Library references: Navigable Waters 14(2). C.J.S. Navigable Waters § 17.

§ 3105. *Duties of board; officers; rules; meetings; quorum*

A. The board of commissioners shall be the governing body of the authority with full power to promulgate rules and regulations for the maintenance and operation of said authority.

B. The board of commissioners shall be a governing body of laymen. It shall formulate general policy. It shall decide upon all matter relating to the authority development program. It shall adopt an annual operating and capital budget.

C. The commissioners shall elect a president annually from among themselves.

D. The executive director, as chosen by the commissioners, shall be the secretary of the board.

E. The board of commissioners shall prescribe its own rules, which shall be adopted and promulgated in accordance with law.

F. The board of commissioners shall meet at least once every sixty days or upon the written request of three members, or upon the written request of the president.

G. All matters to be acted upon by the board of commissioners shall require the affirmative vote of at least five commissioners, with the exception that the affirmative vote of not less than six commissioners shall be required to select the executive director.

Added by Acts 1972, No. 444, § 1.

§ 3106. *Annual reports; revenues dedicated to authority; revenue surplus audit; central listing of employees and investment of idle funds*

A. The board of commissioners shall make an annual report to the governor showing all receipts and disbursements of the board; the number of arrivals and departures of vessels and their tonnage; the exports and imports passing through the authority; the general condition of the authority and its structures, facilities and other properties; and make such recommendations for its development; welfare and management as may seem advisable.

B. All revenues generated by the authority are hereby dedicated to the authority to be used to further the purpose of this chapter subject to the limitations stated herein.

Any revenues of the authority derived from any source whatsoever remaining at the end of each fiscal year, after the payment and satisfaction of all obligations of the authority under the terms of any resolution or resolutions authorizing the issuance of bonds hereunder, and after paying all expenses of operating and maintaining the authority, providing for renewal or replacement thereof, providing adequate reserves for continuous operation of the authority, providing for the acquisition or construction of improvements to such facilities and the purchase of equipment and furnishings therefor, shall be considered as surplus. Said surplus shall be turned over to the general fund of the State of Louisiana for the use and benefit of its citizens.

C. The fiscal affairs of the authority shall not be subject in any respect, to the authority, control or supervision of any regulating body of the state or any political subdivision thereof, but its books and record shall be subject to audit annually by the legislative auditor and its employees shall be listed on the central listing of state employees and it shall invest its idle funds in accordance with the Investment of Idle Funds Act and it shall be subject to the provisions of the Code of Ethics.

Added by Acts 1972, No. 444, § 1.

§ 3107. Executive director; selection; duties; employees; compensation

A. The board of commissioners shall select an executive director who shall exercise all control over all executive functions and the general operation of the authority. The executive director shall serve at the pleasure of the board. All employees of the authority shall be responsible to the executive director who shall organize the personnel employed by the authority in the most efficient manner to accomplish the purposes of the authority as provided in this chapter and by regulations established by the authority's board.

B. The executive director, in addition to his usual functions, shall be secretary to the board of commissioners. The board of commissioners shall fix the compensation of the executive director.

C. Within six months after operation of the port authority has commenced, the executive director, with the advice and consent of the board of commissioners of the port authority, shall submit a plan of classified civil service for all employees of the authority except the board of commissioners, the executive director, an assistant executive director, an executive secretary to the executive director, and professional employees hired on a contract basis.

Added by Acts 1972, No. 444, § 1.

§ 3108. Acquisition of sites; lease of stateowned waterbottoms

A. To nable the authority to perform the work herein provided, the State of Louisiana, acting by and through the register of state lands, is hereby authorized, empowered and directed to grant to the authority a lease on stateowned waterbottoms in the Gulf of Mexico which are selected by the authority as sites for the deep draft harbor and terminal; provided, however, that the mineral rights on any and all state lands shall be served to the State of Louisiana.

Upon receipt of a request from the governing body of the authority describing the lands to be leased by the authority, it is hereby made the mandatory duty of the register of state lands to issue a certificate of title evidencing the lease of the land to the authority as described in the request.

B. The register of state lands shall lease the selected tracts to the authority for five dollars per acre per annum.

C. All such leases shall be for a term of forty years, but the legislature may reevaluate the rental payments upward or downward to reflect changing economic conditions.

D. All proceeds arising from the sale of such leases of stateowned waterbottoms shall be paid by the authority to the state treasurer and shall become part of the general fund of the State of Louisiana.

E. Nothing in this part is intended to authorize the authority to lease stateowned waterbottoms for the exploration, development and production of oil, gas, sulphur or other minerals or for the cultivation or production of marine resources or detract from the authority of the State Mineral Board and/or Louisiana Wildlife and Fisheries Commission to lease for such purposes. However, tracts once leased to the Deep Draft Harbor and Terminal Authority may not be leased by the State Mineral Board or the Louisiana Wildlife and Fisheries Commission without the express consent of the authority, unless it can be shown by the state mineral board or the Louisiana Wildlife and Fisheries Commission, by clear and convincing evidence, that such lease or leases will not adversely affect present or future authority operations.

Added by Acts 1972, No. 444, § 1.

§ *3109. Powers*

A. The authority shall be vested with exclusive and plenary authority to do any and all things necessary or proper for the authority to promote, plan, finance, develop, construct, control, operate, manage, maintain and modify the authority development program.

B. To assert Louisiana's interest in any deep draft harbor and terminal development in proximity to the Louisiana coast, the authority is empowered to negotiate with and enter into contracts, compacts or other agreements with agencies, bureaus or other divisions of the federal government or other states of the United States concerning the authority development program, including jurisdictional aspects of the location of the deep draft harbor and terminal, sharing of revenues derived from the operation of the deep draft harbor and terminal and promulgation and enforcement of regulations governing authority operations.

C. The authority is granted all powers capable of being delegated by the legislature under Article XIV, Section 31 of the Constitution of the state, including but not limited to authority:

1. To own, construct, operate, maintain and lease docks, wharves, sheds, elevators, pipelines, pumping stations and facilities, storage facilities, housing and food facilities, heliport, locks, slips, laterals, basins, warehouses and all other property, structures, equipment and facilities, including belt and connecting lines of railroads and works of public improvement necessary or useful for Deep Draft Harbor and Terminal purposes.

2. To dredge and maintain shipways, channels, slips, basins and turning basins.

3. To establish, operate and maintain in cooperation with the federal government, the State of Louisiana and its various agencies, subdivision and public bodies, navigable waterway systems.

4. To acquire by expropriation any real property in fee, leaving the ownership of any minerals or mineral rights in the former owners, and the prescription of nonuse shall not run against said minerals or mineral rights. In the event of expropriation, the compensation to be paid shall be the actual market value of the property at the time of taking. In the event of the acquisition of a servitude, or use of any stateowned waterbottoms on which there has been granted an oyster lease by the Louisiana Wildlife and Fisheries Commission, the private oyster leases shall be reimbursed by the authority for the actual market value of said lease.

5. To borrow from any person or corporation using or renting any land or dock or warehouse or any facility of the authority such sums as shall be necessary to improve the same according to plans and specifications approved by the authority, and to erect and construct such improvement, and agree that the loam therefor shall be liquidated by deducting from the rent, dock, wharf or toll charges payable for such property, a percentage thereof to be agreed on, subject, however, to any covenants or agreements made with the holders of revenue bonds issued under the authority set forth in R.S. 34:3108.

6. To collect tolls and fees.

7. To borrow funds for the business of the authority.

8. To select an official journal for the publication of the official acts of the authority.

9. To mortgage properties constructed or acquired by said authority and to mortgage and pledge any lease or leases and the rents, income and other

advantages arising out of any lease or leases granted, assigned or subleased by the authority.

D. The authority is hereby empowered to take all necessary steps to protect Louisiana's unique coastal environment from any short-term or long-term damage or harm which might occur from any aspect of the authority development program.

E. The authority may contract with any agency, public or private, to provide for public utilities on such terms as are agreed upon the authority and the respective utilities for the financing, construction and extension of sewerage, water, drainage, electricity, gas and other necessary public utilities in and through said development.

F. Said authority may lease or sublease lands leased from the State of Louisiana and is authorized to negotiate and enter contracts or agreements with any public or private individual, or corporation, for the construction and operation of a petroleum terminal as an interstate common carrier.

Added by Acts 1972. No. 444. § 1.

§ *3110. Protection of deepwater ports*

A. To prevent impairment of the bonds of the three deepwater ports which are backed by the full faith and credit of the state and to recognize the existing authority of and functions performed by the established ports and harbors of Louisiana, it is hereby recognized that the function, power and authority of the various existing port authorities established pursuant to Article 14, Section 31 of the Louisiana Constitution, and others established by specific constitutional provision are not to be diminshed by the jurisdiction and powers exercised by the Deep Draft Harbor and Terminal Authority except as provided in this chapter.

B. The authority may enter into intergovernmental contract agreements with existing port authorities, individually, or with any other parish, city, municipality or subdivision of the state, and may engage jointly in the exercise of any power, the making of any improvements which each of the participating authorities may exercise or undertake individually under any provision of general or special law.

C. The authority, in establishing or enacting its rates and charges for bulk cargo shall consider the overall economic impact on the economy of the three deepwater ports, and its charges and rates shall be compensatory.

D. The authority shall not engage in the handling of break bulk or general cargo without the prior written agreement of the three deepwater ports, which agreement, among other provisions, may provide for use of existing port facilities, rates, wharfage fees and other matters of mutual interest.

Added by Acts 1972, No. 444, § 1.

§ *3111. Public contracts*

A. All public works exceeding the sum of ten thousand dollars, including both labor and materials, to be performed by the authority shall be governed by R.S. 38:2211, et seq. However, this provision shall not apply in cases of extreme public emergency, where the authority has certified such public emergency, but in such case notice of such public emergency shall be published in the official journal of the authority within ten days thereof.

B. Where the authority deems it advisable and in the public interest to purchase machinery, equipment or vehicles of certain makes, kinds or types, the advertisement may specify the makes, kinds or types and, after the advertising, the authority may purchase those makes, kinds or types, but they shall not pay more than the actual market price for the machinery, equipment or vehicles.

Added by Acts 1972, No. 444, § 1.

§ *3112. Bonds; procedure for issuance*

A. The authority is hereby authorized to incur debt and issue bonds for its needs in the manner herein provided.

B. The authority is granted the power to incure debt and issue bonds by any of the means authorized by the constitution and laws of the State of Louisiana, including but without limiting the generality of the foregoing Article XIV, section 31, and Article XIV, section 1, and paragraphs (b.2) and (b.3) of the Louisiana Constitution.

C. Any revenue producing wharf, dock, warehouse, elevator, industrial facility or other structure owned by or to be acquired by the authority from proceeds of bonds issued by it is hereby declared to be a revenue producing public utility as that term is used and defined by the constitution and laws of the state in connection with the issuance of revenue bonds of political subdivisions of the state.

D. As an addition grant of authority beyond other provisions of the constitution, the authority is authorized, with the approval of the state bond and tax board, to issue negotiable bonds for any purpose within their delegated authority, and to pledge for the payment of the principal and interest of such negotiable bonds the income and revenues derived or to be derived from the properties and facilities maintained and operated by them or received by the authority from other sources.

E. Such negotiable bonds may be further secured by a conventional mortgage upon any or all of the property constructed or acquired, or to be constructed or acquired by them.

F. To further secure such negotiable bonds the authority may apply in whole or part any money received by gift, grant, donation or otherwise from the United States, the State of Louisiana, or any political subdivision thereof, unless otherwise provided by terms of the gift, devise, donation or similar grant.

G. Such bonds shall be authorized by a resolution of the board of commissioners of the authority and shall be of such series, bear such date or dates, mature at such time or times not exceeding forty years from their respective dates, bear interest at such rate or rates per annum, payable at such time or times, be in such denominations, be in such form, either coupon or full registered without coupons, carrying such registration and exchangeability privilege, be payable in such medium of payment and at such place or places, be subject to such terms of redemption not exceeding one hundred five percent of the principal amount thereof, and be entitled to such priority on the revenues of the authority as such resolution or resolutions may provide. The bonds shall be signed by such officers as the authority shall determine, and coupon bonds shall have attached thereto interest coupons bearing the facsimile signature of such officer or officers of the authority as it shall designate. Any such bonds may be issued and delivered, notwithstanding that one or more of the officers signing such bonds or the officers whose facsimile signature or signatures may be upon the coupons shall have ceased to be such officer or officers at the time such bonds shall actually have been delivered. Said bonds shall be sold for not less than par and accrued interest to the highest bidder at a public sale after advertisement by the authority at least seven days in advance of the date of sale, in newspapers or financial journals published at such places as the authority may determine, reserving to the authtority the right to reject any and all bids and to readvertise for bids. If, after advertisement as hereinabove provided, no bids are received, or if such bids as are received are considered in the discretion of the board of commissioners of the authority to be unsatisfactory, then and in that event the board of commissioners may publicly negotiate for the sale of such bonds without further advertisement. No proceedings in respect to the issuance of any such bonds shall be necessary except such as are contemplated by this section.

H. For a period of thirty days from the date of publication of the resolution authorizing the issuance of bonds hereunder, any persons in interest shall have the right to contest the legality of the resolution and the legality of the bond issue for any cause after which time no one shall have any cause or right of action to contest the legality of said resolution or of the bonds authorized thereby for any cause whatsoever. If no suit, action or proceeding is begun contesting the validity of the bond issue within the thirty days herein prescribed, the authority to issue the bonds and to provide for the payment thereof, and the legality thereof and all of the provisions of the resolution authorizing the issuance of the bonds shall be conclusively presumed, and no court shall have authority to inquire into such matters.

I. Such bonds shall have all the qualities of negotiable instruments under the law merchant and the Negotiable Instruments Law of the State of Louisiana, and shall be exempt from income and all other taxation of the State of Louisiana.

J. No bonds as herein described shall be authorized, issued or sold except in accordance with specific authorizations hereafter granted by the legislature for each issue.

Added by Acts 1972, No. 444, § 1.

§ *3113. Environmental protection plan*

A. Throughout all aspects of the authority development program there shall be in existence an environmental protection plan, the details of which shall be followed in all respects by the executive director in carrying out any aspect of the authority development program.

B. The environmental protection plan shall be formulated by the three directors, as herein defined, with the advice and consent of the board of commissioners of the authority.

C. The environmental protection plan shall be promulgated by the executive director under the rule-making procedures of the Louisiana Administrative Procedure Act of R.S. 49:951–19:966.

D. The environmental protection plan shall be promulgated within a reasonable time after the appointment of the executive director, but in no event more than eighteen months after the effective date of this chapter. An acting executive director or a temporary executive director may fulfill this function if a permanent executive director is not as yet appointed.

E. The environmental protection plan may be amended at any time in accordance with the provisions of the Louisiana Administrative Procedure Act, to reflect changes in the authority development program. Initiation for changes may come from any of the three directors or any interested person.

F. In preparing the environmental protection plan, or any amendment thereto, at any time during the authority development program, the three directors shall make every effort to reach a consensus. If they are unable to agree, each shall proffer his proposed environmental protection plan and present it to the board of commissioners for its consideration. Each of the three directors shall present detailed comments to the board of commissioners, with recommendations as to the best environmental protection plan. After receiving and studying the recommendations, the board of commissioners shall decide which plan or combination of plans shall be adopted and promulgated.

G. The environmental protection plan shall be an integral part of the authority development program. Costs incurred to develop the initial plan, or any amendments to it, shall be considered an internal cost of the authority development program and shall be considered a cost to the same extent that economic, engineering or promotional programs are considered costs. The three directors shall agree on the appropriate level of funding for the developing of the authority environmental protection plan, prepare any amendments thereto, and carry out the requirements of the plan. To the extent possible, federal funds shall be sought to assist in this effort.

H. The best talent available shall be sought to perform the studies and surveys necessary to develop an environmental protection plan and carry out its requirements in accordance with this chapter. To the exent possible, university-based, public and private researchers in Louisiana shall be utilized. In all cases, the research in support of the environmental protection plan shall be coordinated by agreement of the three directors. The results of all research done in support of the environmental protection plan shall be open to the public and available to any interested person.

I. The environmental protection plan shall contain specific provisions implementing Subsection J below. If specific provisions cannot be set forth due to uncertainties in the authority development program, then the environmental protection plan shall state in specific terms the uncertainties which do exist at the time the plan is promulgated, and why the uncertainties would make the inclusion of specific provisions in the plan premature. The authority environmental protection plan shall contain a separate chapter for each of the paragraphs of Subsection J below and any other chapters necessary to meet the requirements of this chapter.

J. The environmental protection plan shall:

(1) Summarize the salient feature of an inventory of all potential and actual stresses on the natural and human environment which can be reasonably expected to occur in pursuing the authority development program. Consideration shall be given to stresses which have occurred in other parts of

the country and the world where similar functional operations were being performed. Consideration shall be given to the peculiarities of Louisiana's coastal environment. The inventory of potential and actual stresses shall include a prediction of the stress on the coastal environment of major accidents which could logically be expected to occur throughout the authority development program, even though all precautions against such accidents have been taken.

(2) Describe the essential features of existing environmental data upon which the selection of a site for a deep draft harbor and terminal may be based. Indicate how this data has been analyzed and compared with the inventory of potential and actual stresses required in the above paragraph so that the site selected will result in the least total stress on the environment. Indicate how economic considerations are compared with the assessed total stress on the environment to arrive at the best economic-ecologic formula for determination of a site for the deep draft harbor and terminal. State the location and availability of the environmental data upon which these determinations are based.

(3) State how the deep draft harbor and terminal facility design minimizes potential environmental damage, considers environmental factors as a positive part of the design, and controls long-term development so that growth and additions to the deep draft harbor and terminal do not result in random growth or in gradual environmental deterioration.

(4) Present details of how the operational aspects of the authority development program will be conducted so as to minimize environmental problems, including but not limited to a monitoring program by the Louisiana Wildlife and Fisheries Commission; establishment of constructional and operational guidelines for environmental protection; strong enforcement provisions and mechanisms to insure cleanup of accidental spills by technical means, with a surety bond to insure performance. The plan shall consider the circumstances which may justify the temporary cessation of the port activities.

(5) Provide procedures for the funding of projects to be paid for by the authority to the Louisiana Wildlife and Fisheries Commission or any agency designated by the governor which shall compensate the coastal environment for loss that may be sustained through the stresses on the environment created by the authority development program.

(6) Analyze ongoing programs of the federal, state and local governments designed to protect the coastal environment and to insure that there is no unnecessary duplication of effort and to insure that cooperation and coordination of environmental protection measures are achieved. The opinion of all agencies with a responsibility for monitoring the coastal environment shall be sought with regard to this coastal protection plan prior to its promulgation, to determine if there are incompatibilities between specific provisions of this measure and the requirements of other rules and regulations.

K. Nothing in this section is intended to diminish in any way the authority of the Louisiana Wildlife and Fisheries Commission.

Added by Acts 1972, No. 444, § 1.

§ 3114. Coordination and cooperation

A. It is the policy of this chapter that the authority development program be pursued so that there is full coordination and cooperation between agencies and groups that have complementing or overlapping interests and the authority. It is not the policy of this chapter that the authority development program be pursued independently and with a view toward narrow, short-term interests.

B. The board of commissioners shall take affirmative steps to fully coordinate all aspects of the authority development program with the Louisiana Advisory Commission on Coastal and Marine Resources (Act No. 35 of 1971) or its successor group, which is charged with the development of a coastal zone management plan for the state.

C. The board of commissioners shall take affirmative steps to insure that the authority development program is coordinated into the planning programs of other modes of transportation, to include rail, road, waterway, air and pipeline, so that there is a long-term and orderly pursuit of transportation services in the coastal zone which are interrelated and coordinated so as to achieve the most efficient and economical transportation program that is feasible and that will be least destructive of other values in the state.

D. The board of commissioners shall insure that the appropriate federal agencies which are required by federal law to plan or regulate transportation facilities or programs are consulted regularly and are fully involved in the authority development program where appropriate.

Added by Acts 1972, No. 444, § 1.

Mr. DOWNING. Thank you, gentlemen, again.

Our next two witnesses come from the State of Mississippi and we are pleased to have our colleague, Congressman David Bowen to present these gentlemen.

Mr. BOWEN. Thank you, Mr. Chairman.

We are very fortunate to have with us two distinguished Mississippians who have spent a great deal of time working in this particular area, Dr. Talmadge Bankston, director, office of science and technology, State of Mississippi, and Dr. Robert Robinson, executive director, agricultural and industrial board, State of Mississippi.

Although the Mississippi-Alabama project may not have been first with the most in terms of this competition, if there is a competition for this project, we hope the last will be the best, and we commend to your attention the testimony that these gentlemen will present to you this morning.

Mr. DOWNING. You two gentlemen are ably represented by two able Congressmen on this committee, Mr. Bowen and Mr. Lott.

Any comment, Mr. Lott?

Mr. LOTT. I am pleased to have these two gentlemen up here and have been looking forward to their testimony.

I do have some questions for them when they present their testimony.

STATEMENT OF DR. P. T. BANKSTON, DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY, STATE OF MISSISSIPPI; ACCOMPANIED BY DR. ROBERT L. ROBINSON, EXECUTIVE DIRECTOR, AGRICULTURAL AND INDUSTRIAL BOARD, STATE OF MISSISSIPPI

Mr. BANKSTON. Thank you, gentlemen.

Mississippi is very pleased and proud to make a contribution to your committee by sending you two of our most outstanding and able young men to represent Mississippi in the Congress of the United States and to serve on this important committee.

We appreciate the opportunity to represent Governor Waller, who is in Japan, but he wishes both of us to express his views on the legislation that you have under consideration.

Both H.R. 5091 and H.R. 5898 pertain to the construction, operation and maintenance of new offshore port facilities; and both would specify various criteria that must be considered before the Federal Government would allow the construction of any new offshore port facilities to be started.

The State of Mississippi, in collaboration with our neighboring States of Alabama and Tennessee, is aggressively seeking to obtain a new deepwater port to be located offshore from the Alabama-

Mississippi Gulf Coast for the purpose of bringing the needed increased foreign petroleum and petroleum products into our country, and consequently the bills in question are of extreme importance to us.

We have formed what we call the Ameraport council to coordinate our efforts in this regard, and we expect that some other States that would also benefit from a deepwater port off the Alabama-Mississippi Gulf Coast will join with us in support of this needed new facility in the very near future.

We agree with the objectives of both of the bills in question in the sense that: (1) the approval of the Federal Government shall be required for the construction, operation, and maintenance of such offshore facilities, and (2) such facilities shall not result in an unacceptably adverse impact on the marine environment.

Nevertheless, we are opposed to the enactment of either or both of the bills as presently written for the following reasons:

1. The requirement in section 403 of H.R. 5091 "that all possible precautions have been taken to minimize any adverse impact" is unreasonable and, if interpreted literally, would prevent the construction of any new deepwater port facilities in the United States at any place at any time.

The language also used in section 403 of H.R. 5091, "that the activity involved will not result in an unacceptably adverse impact on the marine environment" would appear to provide all of the protection for the environment that is required.

2. The requirement in section 403(b) of H.R. 5091 that the "applicant shall submit reasonably detailed plans of the structure at least 2 years prior to the expected date of the beginning of the construction," it seems to us, would arbitrarily delay by at least 2 years the beginning of the construction of new port facilities that are needed now.

Although it is recognized that some time shall be required for proposal evaluations and other procedural matters leading to the approval of port construction, the public interest requires that this time shall be as short as possible. And, certainly, the construction of the needed new port facilities should not be delayed unnecessarily by the inclusion of an arbitrary 2-year provision in the law.

3. With regard to H.R. 5898, we recognize the need for the Secretary of Commerce to participate in the Federal approval process applicable to port facilities, but we believe that other Federal agencies should also participate in a manner that would provide an applicant with a single point of contact in the Federal Government for all of the approvals he might need.

In this regard, it is important to understand that a port is not an isolated facility, but rather a part of a materials distribution system which extends onshore as well as offshore.

The Ameraport system visualized by Mississippi and our neighboring States would be worthless without onshore storage terminals, refineries and pipelines.

An applicant should not be required to seek approval for the port from one Federal agency and approval for the refineries and pipelines from another.

Further, the public interest will best be served through Federal evaluation and approval of the entire system, rather than through fragmented considerations in a number of Federal agencies.

We, therefore, strongly recommend that a single point of approval be designated. Our desire for a single point of approval is stronger than our desire for this point to be centered in any particular agency. Wherever the single point is established, consultation and coordination with other Federal agencies having interests and responsibilities concerning the proposed project should be required, of course.

The Governors and legislatures of the various States have been struggling for a long time, trying to balance the protection of our natural resources while, at the same time, providing a framework for economic growth.

Our Governor and others have urged the President with the Congress to develop and announce national policies that will assure our State and the entire country of a continuing adequate supply of energy to meet residential, institutional, and industrial needs, and provide the diversity of energy products that the economy requires.

Such policies should include: (1) A clear definition of the respective roles of government, private industry, and the private citizen, in the implementation of this policy; (2) a plan to increase our domestic supplies of energy in order to enable our country to achieve and maintain a degree of self-sufficiency, commensurate with the national interest; (3) an environmental/energy rationale that will differentiate between environmental degradation that threatens the health and welfare of our citizens and other forms of degradation which, although undesirable, can be tolerated, if necessary, to assure our citizens of the supply of energy necessary for personal and national health, welfare and security. It is within this context that I would like to address this committee.

It seems unnecessary for me to repeat the very compelling reasons as to why superports are ~~needed~~ to serve our country. You have already received considerable evidence of the need for importation of larger quantities of foreign oil.

Nor do I think it would serve any useful purpose for me to comment upon the current energy crisis. I am sure that your constituents are keeping you well advised of that development.

In preliminary studies commissioned by the Ameraport council, consideration was given to a variety of factors, such as hydrological, environmental, aerological, land features, major consumer areas, pipeline systems, consumer interest, industrial development, and national security.

Copies of the Ameraport reports have been filed with this committee by Dr. Moeller. These reports became the basis for inclusion by the Corps of Engineers in their Gulf Coast deepwater port facility study, the draft of which is nearing completion.

These preliminary studies, reinforced by ongoing research activities by our universities, State agencies, and through contracts with nationally recognized consultants, are continuing. Earlier conclusions are borne out, and we will now tell you why the first of the superports should be located in the vicinity of Pascagoula-Mobile, off the Alabama-Mississippi coast, why a superport in this area will not only be of service to Mississippi, but it will also best serve a great portion of the United States where energy is most needed.

In considering the best location for these new superports it is important to understand the port facility alone will not provide the energy that is needed by this country, nor will it address other longstanding issues of major national importance.

Our energy problems cannot be solved solely by adding on a superport to existing systems which, in many cases, already exceed practical limits in size.

What is indicated is entirely new systems, new refineries, new product distribution facilities, new terminals—all are needed to make our efforts most productive wherever the superport might be located.

We have an opportunity, and we feel a responsibility to put the new superport, the new energy systems which will extend from it, where it will not only have minimum adverse environmental impact, but will also most enhance the economy of the country and provide maximum benefits in general through new energy alternatives.

An application for a permit for a deepwater port facility should not only address the marine environmental factors which you have outlined in your bills, but should also include the definition of a development plan, the industrial growth that would be attendant to such a facility, and the impact upon the economy of the State, the region, and the country.

Energy processing centers should be investigated, not only at the point where the submarine pipeline touches land, but supply and demand in relation to energy flow to other States and regions served from the area should be included.

Such comprehensive evaluation would find the Alabama-Mississippi gulf coast among the preferred sites for the new superport for a variety of reasons, including strategic location with respect to the major inland waterways that serve mid-America, as well as the intercoastal waterways system.

While pipeline systems will be increasingly important, waterborne movement of commodities and products will continue to be an essential transportation mode for petroleum, both raw materials and products for many years to come.

Accessibility of this region to the major existing petroleum pipelines extending from the Texas-Louisiana gulf to the east coast and to the major crude pipeline systems extending in a generally northerly direction to the midcontinent area will result in substantial consumer savings since it will be closer than Texas or Louisiana to the major eastern markets, thereby resulting in transportation cost savings to those customers.

We feel the employment of modern technology and engineering concepts will result in a deepwater port off our coast that is compatible with the ecological, political, cultural, historic, and aesthetic values of this region, as well as help meet the pressing needs for economic development which must be considered in determining permissible land and water uses in the coastal and offshore areas.

We recognize the potential for environmental damage, but we believe that we can control it within acceptable limits.

We are aware that population growth and industrial expansion accompanying a deepwater port facility will place additional stress on the coastal areas of this and neighboring States.

In this regard, it is important to note that Mississippi is the only State bordering the Gulf of Mexico which has a wetlands protection law in order to provide regulation and control of activities conducted in the wetlands and water bottoms of the State.

The low per-capita income in our State and in this region is particularly a concern to those of us who live here, but it is also a matter of national concern.

The development of a deepwater terminal off our coast will provide job opportunities, not only for the immediate region, but also for our neighboring States to the north.

The economic aspirations of underdeveloped nations in other parts of the world is an accepted part of our international policy. Should not economic development of the underdeveloped parts of this country likewise be an accepted part of the resolution of such important national issues as the energy crisis and protection of the environment?

Despite substantial investments in public works programs—such as the Economic Development Act, the Appalachian Regional Development Act, and others—this region has not yet reached that critical mass of economic self-sufficiency that will permit it to achieve those levels of living enjoyed by more affluent sections of our Nation.

The prudent location of superports and the logistics and energy systems radiating from them can become an important tool in the resolution of longstanding issues of national importance and without substantial public investment.

Such public investment initially was necessary to provide the infrastructive upon which economic growth can occur, and much of this has now been done. Now, policy decisions alone can result in the dispersion of refineries throughout this entire region.

Map 1 shows the location of the refining industry in this country. The large concentrations in Texas and Louisiana occurred where they are shown for very good and justifiable reasons—that is where the oil was in the ground.

The net new refining capacity so greatly needed by this country can be dispersed along the transportation systems such as the energy corridor shown schematically on map 2.

The size of those circles indicate the amount of the refining industry at the indicated locations. This is from the Sorros report to the Maritime Administration. You will notice the concentration along the coast plus quite a few refineries, relatively small, along the Mississippi tributary system.

Dispersion of the to-be-built refinery capacity would result in additional national benefits. National security—both economic and defense—would be enhanced. While it is unlikely that within the foreseeable future, this Nation would experience a "Ploeste"—the possibility of interruptions to this vital segment of our industrial machine from natural or accidental manmade disasters would be reduced by a policy of dispersion.

If one includes within the broad definition of national security the ability of the Nation or region to recover from a stress, then dispersal would enhance this stress recovery ability as well.

Consider, for example, the fuel shortages that occurred during the cold weather last winter and those that are occurring in gasoline this summer.

In a general way, those areas closest to terminals or refineries have the least trouble with shortages, simply due to the fact that the longer the pipeline, the longer the response time for the system to react to changes in demand at the customer level.

Another important aspect of port facility siting is public attitude. While difficult to quantify, the nevertheless important dimension of our decisionmaking process, this should be included.

The attitude of the public and the Government at State and local levels toward a project of this type if at times equal in importance to economic and environmental considerations.

In Mississippi, the people, industry, and government at the local and the State levels share unity of purpose in balancing sensible economic growth and rational environmental protection.

In recognition of the importance of deepwater port facilities and the responsibilities of the States, the Mississippi Legislature enacted an interstate compact to support our efforts. Identical legislation is now in process in the Alabama Legislature.

I know of no other instance where such unified commitment toward success of a project of this type exists.

In summary, from the point of view of meeting any environmental requirements proposed by this or any other legislation, the site we advocate can stand on its own feet. From an administrative view, we do strongly advocate thoughtful accommodation of environmental protection considerations with economic development imperatives.

Mr. DOWNING. Thank you very much for your very fine statement, Dr. Bankston.

Dr. Robinson, do you have a statement?

Mr. ROBINSON. No, sir; not at this time.

Mr. DOWNING. Dr. Bankston, in your opinion, the words in the bill "that all possible precautions have been taken to minimize adverse impact," is that too rigid a requirement?

Mr. BANKSTON. I think it can lead to long delays in court suits and that sort of thing, Mr. Chairman.

Bear in mind that I am not a lawyer. I happen to be a chemical engineer. I conceive this legislation when passed to be an agreement between the Federal Government and the State with respect to the specific provisions ultimately contained in the bill. The States should have the responsibility and authorization to interpret the provisions.

Mr. DOWNING. Could you accept the word so that it would read "all reasonable"?

Mr. BANKSTON. That seems to me to be acceptable, certainly.

Mr. DOWNING. How do you feel about the State having the right to veto?

Mr. BANKSTON. I think I feel very much as Mr. Mills does, that a State should not have the right to veto neighboring States' efforts. The State does have a responsibility and the legislation, I think, should be permissive so that the State can act in a positive way through regulations to control—See A. And failure to act would relieve it of its right to have that veto posture.

Mr. DOWNING. Thank you very much.

Mr. Eckhardt?

Mr. ECKHARDT. On this question about the language concerning environmental impact, it is true, as you point out, that literally read this would set a very, very high standard, that is a question of possibility.

But, one thing that does concern me a great deal is if you do not set a pretty strict standard, and if you leave it pretty much up to the agencies' weighing of environmental factors against commercial factors, you may give the agency the authority to destroy one industry while building another.

For instance, the shrimp industry would be an example in this respect, and that is a very important and very valuable industry.

What would you think about language something like this, that such a superport shall not be initiated unless all precautions have been taken within the means of modern technology to protect other commercial and environmental values otherwise substantially affected?

Do you believe that would be too strict?

Mr. BANKSTON. I would be glad to address that in more detail and submit information separately, if you wish, but I would find it difficult to do the report to support either side of the arguments you have just put forth.

Mr. ECKHARDT. Let me tell you what I am getting at before you make a further comment on this.

You could either set the standard extremely high, as in the bill now, or you could give the agency almost a free choice based on the weighting of factors, or it might be argued that existing interests, existing environmental interests, and particularly the commercial interests of other industry affected should not be adversely affected as long as there is technological capability to protect it.

It seems to me that the existing commercial interests should be weighted to some extent over the interests that is aided by the port, because it was there, it was enjoying the benefits of environmental safeguards or immunity from dangers prior to the intervention of the superport.

Mr. BOWEN. Would the gentleman yield?

Mr. ECKHARDT. Yes.

Mr. BOWEN. Do you not think it is possible that just unlimited language about the ability to control pollution, for example, through any available means or technology might rule out the economic feasibility of the project.

Now, there are some means which are available technologically which are so expensive that the whole operation would be invalidated.

Do you think possibly some language tied to economic feasibility, or a balance between what would make the whole operation economically feasible, weighing it against environmental factors might not be worth feeding in this formula?

Mr. ECKHARDT. Well, suppose it is more important, or is considered more important by some agency of Government to bring in a great quantity of oil and gas to this country, and as to have any shrimp industry in the State of Texas or Louisiana and there is no technological means by which there will not be the risk of great danger to that industry.

It seems to me we should then not build a port. That is what I am getting at.

Mr. BANKSTON. If all of these values can somehow be quantified, and that is a very difficult thing to do in making an environmental impact assessment, then the relative importance of the impacts and consequences of actions would be much easier. In many environmental statements you will find that there are virtually no index numbers that will permit comparison as you go from one value system to another. How do you compare the value of environmental protection with the economic development worth of a proposed action? What is the value of preexisting circumstances? How is it measured?

Mr. ECKHARDT. I realize that really we have the question of degree, and it may be a very difficult one to answer, but I am merely suggesting to you that where there is a destruction or a threatened destruction to an existing vested commercial concern like the shrimp industry, that it should not just be a question of weighing the amount of value in bringing in oil against the amount of value of the shrimping industry, because the shrimping industry was there.

I am enough of an old constitutional lawyer to take the position that you may not move in and take away property merely because it may be more advantageous to the public to do so, at least not without condemnation and paying the industry which is injured the losses which occur there.

Mr. BANKSTON. In general terms, given our specific situation in Mississippi now I am less concerned about hard language such as you are suggesting than I would be if I were from Louisiana, for example, where potential wetland damage is approximately tenfold that in Mississippi.

Mr. ECKHARDT. Or Texas.

Mr. BANKSTON. A lot depends upon the state of advancement of our technology and the depth of our understanding of the consequences of our actions on the environment.

Let me give you a true environmental story that happened in the early part of this century, in the 1930's, Congressman Lott, down your way.

In the middle gulf coast, there is a string of offshore islands, starting about Pensacola and continuing off Louisiana's southeastern coast.

In those days, off Mississippi, between Ship Island and Horn Island, (which are now part of the National Seashore) there was an island called Caprice, which was quite a resort area in the early part of this century. On the island were houses as well as casinos and other buildings. The sand dunes, reaching 20 to 30 feet elevations, were covered with sea oats, a very attractive plant. Over a period of time visitors began to gather these plants since they were very attractive in their natural state and in the home as a decoration. Eventually a department store awarded a contract to harvest large quantities of sea oats. Within a short time interval of a few years the sea oats were stripped, and shortly the wind began shifting the sand dunes. Then we had a hurricane, in the early 1930's, which did substantial damage to buildings and leveled many of the dunes. People began to leave, and a couple of years later another hurricane obliterated the island. The only thing standing there now is a pipe, sticking out of the water 6 feet, still flowing fresh water.

The point of all this is if we had known back then what we now know about environmental protection we would somehow have prevented the stripping of the sea oats.

In a similar way, if we knew now what we will know 10 years hence, we might take different action than we now propose.

We do have available a lot of technological information, and to use the title of a book by Jan McHarg, we need to "Design with Nature."

We know very little about the circulation patterns in the gulf, for example. What we do know suggests that even if the water was 100 feet deep closer in to shore we would still like the facility to be 25 miles out.

If we had our option, even without a prospective port in Louisiana in the picture, we would prefer to locate the port as far to the east as practicable—off Jackson County—because the ocean currents will give our beaches greater protection. The further east the port location, the greater will be the tendency for the currents to move a spill away from shore. More shoreward and western locations are influenced by secondary bifurcations of the surface current which may tend to sweep surface oil onto the beach and the wetlands. Factors such as these need to be incorporated in the system design and considered by those responsible for evaluation of the total project.

Mr. Eckhardt. Thank you.

Mr. Downing. Mr. Goodling?

Mr. Goodling. No questions.

Mr. Downing. Mr. Bowen?

Mr. Bowen. Thank you, Mr. Chairman.

I notice in your testimony, Dr. Bankston, you mention that there are some cost factors to be considered for the consumers of the Nation in terms of choosing a site, say in the east gulf area, as you propose, as opposed to say the west gulf area.

I wonder if you might comment on that in a little greater detail in terms of what it means, and in terms of the American consumer, where the large concentrations of population are.

Can we evaluate what effect it might have in terms of gasoline at the pump?

Mr. Bankston. Obviously, the place where most of these products are needed, the gasoline, diesel oil, are where most of the people are, that is on the east coast.

Public attitudes seem to be effectively blocking any development there for the immediate future.

The closer you can get the facility to those consumers, the better off the customers will be in the sense that the transportation costs should be optimized in their favor.

It is merely that we are closer to those customers on the pipeline system that would be a Texas site, for example, because the customer has to pay the final bill.

We estimate that annual savings of $25 million per million barrels per day should accrue to the east coast consumer as a result of lower transportation cost.

Mr. Bowen. I notice you mentioned the security factor.

Do you feel that the location of an east gulf site would foster the development of refineries in this area, rather than the heavily concentrated refinery capacity that we already have in the west gulf area?

Mr. Bankston. That is right. What we are advocating is a series of policies that would enhance national security from the point of view of dispersing the refining industry. We do not say close down refineries that are already going, but what we do say is to have policies that would favor dispersion to other parts of the country rather than concentrations where they now exist.

As you well know, something like 35 percent of our refining capacity is in the Texas-Louisiana area. There were good reasons why it started there, but those reasons are not as compelling now with the technology of transportation being what it is.

Mr. Bowen. In your conversations with Mr. Eckhardt, I believe you mentioned, or did I understand you correctly, that a site in the area east of the Mississippi where, in the case of a spillage or a leakage the prevailing currents would sweep that spillage out to sea, as opposed to the area to the west, off the Louisiana and Texas coast, where the prevailing current would carry the spill inshore, is that correct?

Mr. Bankston. I will not make it that specific. One must look at a given site and the currents at that site.

In general, east of the mouth of Mississippi River, as opposed to west of the Mississippi River, offshore circulation is moving in a clockwise direction. Close in to shore there is a counterclockwise direction.

If the site is far enough out to be in the clockwise circulation, a spill would be moved seaward. In the event a spill does get ashore, then one needs to look at the extent of damage that would occur from a cost-risk point of view.

Our wetlands are almost exactly one-tenth of those of Louisiana, so assuming a massive spill that completely covered the wetlands of Mississippi, all this would be but 10 percent of the damage that would occur in Louisiana.

Now, do not construe as what I am saying as trying to be an argument for Mississippi as opposed to Louisiana. I am merely using that because of the extent of the wetlands there. These are the kind of factors that should be considered in evaluating the total system, not just the offshore facility.

Mr. BOWEN. But the proposed site, say in the Louisiana area, does the current flow different there from the proposed Pascagoula-Mobile site?

Mr. BANKSTON. Yes.

Mr. BOWEN. There really would be a difference in the way of a spillage, depending on the way the current would take it.

Mr. BANKSTON. Such information is in the technical reports that have been submitted to you. Wherever the facility goes there will be a contingency plan to cope with the eventuality of a spill. You will have to cope with whatever the circumstances turn out to be where you build it.

You know, you can evaluate it two ways, what do you have to do to cope with a potential spill? It is a tradeoff, the cost of coping, the consequences of the oil getting past you in one situation versus another.

Mr. BOWEN. I know our friends to the west have brought to our attention that they have a great deal of financial capability to finance this project.

I wonder what you might say about the readiness of sources of Alabama and Mississippi and the East Gulf area to underwrite the cost of the operation.

Mr. BANKSTON. First, let me say that I think the oil companies, the groups that have banded together, LOOP and Seadock, have evidenced a little bit more foresight perhaps than we have with our national legislation, and perhaps even than the States. They have seen these problems coming for a longer time, and have organized themselves to try to deal with them.

The States have been a little slower than the National Government, which is now beginning to take action.

In Mississippi, we have not enacted legislation authorizing the expenditure of massive amounts of State money for the construction of such a facility.

Our legislative action thus far has been to appropriate, about $400,000 for studies, and support of the superport promotion.

We do feel very confident that the people of Mississippi and the legislature will react in ways similar to what they have demonstrated before.

It was only a few years ago that we built the shipyard in Pascagoula to the tune of $130 million, which was pretty much of an innovation at that time for a State.

Now, both Mississippi and Alabama, at the State level, I am sure, will do whatever is necessary in terms of providing the financial vehicles or financial assistance.

We envision, as does Mr. Mills, from his statement, and as I understand does Texas, that most of the financial investment would be private capital. We simply have not gotten our LOOP or Seadock together, but we are working on it.

Take a look at the list of participants in those companies and you will see the major companies are already in one or both of those. We are dealing with some of the major companies that do have an interest in LOOP and/or Seadock, and we are also dealing with some of the independents. I think that is a possible market area, Mr. Chairman.

We believe this notion of an energy corridor which would facilitate the construction of installations such as pipelines, pipelines for oil moving north, and perhaps pipelines for coal moving south, and looking at the other kinds of infrastructure, the highway systems, the rights-of-way, crossing a common river, a variety of things—in view of the tightening supply of capital to the major oil companies, some of these may prove of interest.

Dr. Robinson is head of our A. & I. Board, which is the State agency primarily concerned with development, and he may want to comment.

Mr. ROBINSON. I just want to bring these two points out.

One is that in my opinion financing will be secondary, that is we should give the most consideration to the environmental aspects of it, the economy of cost, the economic development, potential and given impact on an area, and I do not think this can be over stressed that we have in this segment of the country that we have not really had a real strong economic base, and this offshore terminal and energy corridor which we conceive to be expanding into something other than just a single pipeline, but multiple pipelines, perhaps powerlines, and even perhaps roads which will fit into the overall land use concept.

This is a very important consideration, Mr. Bowen.

In other words, to me they are the primary considerations. Financing will follow.

Now, as Mr. Bankston has mentioned, we have talked to many of the oil companies involved in Seadock and LOOP. We have talked to many of the independents, and these people tell us that financing is not a problem, that once you get a permit we will go wherever the permit goes.

They say we have signed pieces of paper with Seadock and LOOP, and for that reason we would like just to leave things as they are. But you have a verbal commitment out of us, and if this thing turns into competition, and we hope it does not, but if you people get a permit first, we will certainly go with you.

I think financing is secondary, and second, I think private financing will be available wherever the permit is given.

Mr. BOWEN. Thank you.

Mr. DOWNING. Mr. Lott?

Mr. LOTT. Thank you, Mr. Chairman.

Doctor Bankston and Dr. Robinson, again I would like to thank you for coming here and presenting your statement.

I would like to particularly commend you on the fact that you addressed yourself to the legislation before this committee which is the primary purpose of these hearings, and I think some interesting things have come out on what you have presented and what we have asked.

As you know, it is not going to be easy to prepare legislation that will deal with this area. I think it is good that you addressed yourselves to some of these questions that the bills involved.

I was interested in your comment about State legislation. Has any State legislation been enacted to deal with the superport possibility, and second, what do you anticipate might be required by a State, the State of Mississippi, or other States in preparation for installation of a superport off the coast of Mississippi?

Mr. Bankston. The State legislation so far is largely just one of appropriation plus the interstate compact, something of this type was the beginning of the Tenn-Tombigbee Waterway.

Out of these studies that have been done it may well turn out that we need additional authority type of legislation to create some sort of authority.

We feel that we now have several public bodies which have, under existing legislation, the authority. The funds to do it with is another matter.

The A. & I. Board has broad authority under some port development type legislation.

The Port Authority of Jackson County and the counties themselves, have enough authority, we think, for this.

As events evolve there may be other legislative needs defined.

Mr. Lott. This joint effort that you have between Mississippi and Alabama and Tennessee, this is something the committee and I have heard before.

Exactly what participation do you have, for instance, with Alabama and Tennessee?

Mr. Bankston. The participation is really through a coordinating council, three members appointed by Governor Waller. Dr. Robinson and I represent two-thirds and Mr. Grazier, the Governor's executive assistant, for Mississippi; Mr. Moeller, Senator Noonan and Mr. Bomberg for Alabama.

Tennessee is in its formative steps. We thought there was not as much need for involvement at this time, and not the demand on their time. Governor Dunn has appointed one representative, the director of State planning. In other States contiguous to Tennessee there is much interest in looking at the possibility of participating with us in examining new approaches to this whole problem of transportation, economic development, and energy distribution.

Mr. Lott. So you have a seven-man board, more or less?

Mr. Bankston. Yes.

Mr. Lott. Do you have one central figure?

Mr. Bankston. We have a chairman. We do not have any permanent staff.

Mr. Lott. Who is the chairman?

Mr. Bankston. Senator Noonan, who was here yesterday.

Mr. Lott. You said in your statement that you have already made some preliminary studies.

What have you done with those studies, to whom have you submitted them?

Mr. Bankston. These have been submitted to the corps, and to some congressional committee staffs.

In our studies we are somewhat behind Alabama and Louisiana in the timetable, but are still in progress.

Mr. Lott. One of the things brought out at these hearings, the major thing is that there is a definite need for legislation in this area, so we would have one central coordinating agency or department, and that is the reason I ask the question.

You are in a position of almost not knowing what to do if you get it at this time, of course.

Mr. Bankston. That is correct.

Mr. Lott. I am very much concerned about the financing, Dr. Robinson, of these activities.

I have serious reservations about what State or any type of public financing could do.

At the end of your statement, Dr. Robinson, you did indicate that you are talking to private industry about participation.

Mr. Robinson. That is correct.

Mr. Lott. Well, I think that is a very important thing. It has been our impression by the LOOP representatives and Seadock, that they have done an outstanding job.

One of my comments was that private enterprise is the way to go.

Do you have any further comment on that?

Mr. Robinson. We agree that the private route is the route to go.

I think Mr. Bankston mentioned the fact that both Jackson County and the State of Mississippi are willing to finance, but I think this only shows the public interest in this and the acceptance of it, and in my opinion this would not be the better way to go. The better way to go would be through private financing.

Mr. Lott. One final question.

I certainly agree with you that the economic impact that it would have on an area is an important one.

Have you, in your studies, come up with any indication, and perhaps some of the others might be able to answer this, what equivalent of a superport is going to be, how big an industry or industries?

Do you have any idea of what impact it would have on the area?

The estimate to construct the facility is it will run around $500 million.

In terms of jobs or other impact, have you looked at that?

Mr. Robinson. We have no hard figures.

Mr. Lott. A lot of participation of new refineries and things of that nature.

Mr. Robinson. From an economic point of view this energy corridor concept going up to the Tennessee-Tombigbee Waterway, and going up to the Canadian border with the completion of the Waterway, then with the potential for spinoff, with refineries and spinoff industries, the economic impact on Mississippi, Alabama, Tennesse and all States involved in the corridor, as well as the ability to get economical energy to the east coast and to mid-America, to me this has most fantastic potential, and I would be, you know, of course I do not have any figures to say it will have X amount of economic impact, but we are in the process of putting together an economic impact study which will give us, you know, the tentative impact and the long-range impact.

Mr. Lott. That is the reason I asked the question.

If we are going to make the assertion economic impact on the depressed area it would be justification for it.

As a Pascagoula-Mobile boy, I thank you again, and ask you to move forward with much haste.

Mr. Downing. Counsel has a few questions.

Mr. Heyward. In connection with your statement, Dr. Bankston, you say an applicant should not be required to seek approval for the port from one Federal agency and the approval for pipeline and refineries from another.

Is there now a requirement for refinery permits to be obtained from a Federal agency?

Mr. Bankston. Part of this is anticipating some legislation in the mill, Mr. Counsel.

It is also perceived from the point of view of the State, or an agency of the State, being that applicant and trying to put the entire package together.

We, within the State and Federal level, have certain regulatory agencies that do now have a refinery siting responsibility in terms of air quality and water quality, and this sort of thing.

Mr. Heyward. But I would assume that primarily that is the State responsibility rather than that of a Federal agency, as long as they consider the Federal laws which may be applicable.

Mr. Bankston. That is right. Pipelines crossing the Continental Shelf and inland waters, that kind of thing.

Mr. Heyward. In connection with your planning in the State of Mississippi, this committee reported out, and the Congress passed last year, the Coastal Zone Management Act.

There were funds authorized in that act for assistance to States for planning purposes in the coastal zone.

Has the State of Mississippi developed, or begun to develop a coastal zone program, and if so, has the lack of funding created any problems for the State of Mississippi?

Mr. Bankston. Not taking your questions in order, the State did respond to the Coastal Zone Management Act. We already had in existence the Mississippi Marine Resources Council, which had certain oversight of coastal zone management to differentiate that from a research group which was aimed primarily at the sea grant program.

This group was funded for the purpose, in effect, of getting the program going whether or not the Federal share was there and, of course, we would like to have the Federal participation.

The council has already contracted with one of the major corporations to begin the development of a coastal zone management plan, that report which was by Westinghouse has been delivered. While all recommendations have not been completely accepted, the council is now ready to move into the real planning effort.

Some legislation was passed this session relative to management of the wetlands, which becomes effective the first of July.

This requires permits by the Marine Resources Council for a variety of activities in the wetlands and in the offshore waters.

In the absence of certain planning activities they are handicapped due to the fact the Federal funds were not made available, but we are trying to piece together from a variety of sources the necessary funds and we think under the circumstances we have a pretty good program underway.

Mr. Lott. Will the gentleman yield?

Mr. Heyward. Yes.

Mr. Lott. I met with the representatives of the Mississippi Marine Council here with Mr. Pollock and the coastal zone management representatives, and Mississippi has submitted the first application for funds.

They have completed the application, but it has not been funded, but they are trying every way in the world to get it funded, or get some preliminary assistance to continue with the efforts they have made.

Mississippi was one of the first States to take advantage of the law passed last year when it came out of this committee, but it has not been funded.

Mr. Heyward. I was really trying to determine whether, if those funds were presently available, it might be a help for Mississippi in this very problem area we are discussing under this bill.

Mr. Bankston. It would indeed, in that dealing with the Congress, I am sure just like dealing with the legislature, you have to justify very thoroughly and carefully the requests you make of them.

Our request for funds to support the studies we are doing about the superport, for example, would have been smaller had some of the coastal zone management funds been available—much of the work would have been done.

Mr. Heyward. Chairman Downing has appeared before the Appropriations Committee to ask for funds for that act, despite the fact that the administration did not request any.

In connecion with the Tennessee Tombigbee project, have all of the legal issues been resolved, all of the court cases concluded, in connection with that project?

Mr. Bankston. I really cannot answer that. It was a favorable decision. Just a couple of months ago the decision was handed down, and they did proceed with some construction.

Congressman Bowen, would you know?

Mr. Heyward. My question was addressed to when you foresaw that that project would be completed.

Mr. Bowen. The Federal District Court has ruled favorably, and as I understand it, the Fifth Circuit Court of Appeals is on the verge of issuing a ruling on it.

I had an opportunity during the period I served as Federal-State coordinator for Mississippi to review that environmental impact statement, and I was very favorably impressed with it, and I am impressed with the fact that the courts have upheld the environmental soundness of that project, and every indication from what we have seen so far is that it will meet no further obstacles.

Mr. HEYWARD. I assume that the State of Mississippi will have no objection to complying with that plan, a complete environmental impact statement.

Under the National Environmental Policy Act that will be required before the issuance of a permit.

Mr. BANKSTON. We hope it will be a requirement, and in anticipation of that, much of our work is directed toward that end.

Mr. ECKHARDT. May I ask a question?

I am not quite sure whether you gentlemen are speaking in favor of a single offshore port, or are you urging that there be east gulf coast offshore port that would serve as the energy corridor, or as the supply station for the eastern part of the United States?

I make this comment because I note by your map showing the U.S. crude oil refining capacity coastal regions I note by that map that the gulf coast supplies approximately 7 percent of the total refining capacity is onshore from the offshore port if it were developed in Mississippi, and about 63 percent is on shore from an offshore port near Galveston.

I also note here, well, the thing is if you built only one offshore port, you would be talking about serving the major portion, 63 percent of the refining capacity, at a distance of 500 miles.

Now, certainly that would not be feasible.

Mr. BANKSTON. No, sir; we are not advocating a single port.

What we are suggesting is perhaps reevaluation of the other two which anticipate a continuation of, in effect, the same system of concentration of the refinery.

We advocate two or three facilities but only if there are customers to put oil through it.

Mr. ECKHARDT. That is right, and of course, the question of the customers will determine the question of being able to generate the money to build it.

Mr. BANKSTON. That is right.

Mr. ECKHARDT. Your map very clearly indicates, I think, a broad picture of refining in the general area, and it shows about 1.57 million barrels per day capacity exists roughly centered at Baton Rouge, and about 2.64 million gallons per day at roughly Houston, so clearly there ought to be under your concept at least two ports, should there not?

Mr. BANKSTON. Yes, but one should take into acount the entire crude supply system, for domestic and the imported crude, and somehow optimize all of this for the Nation, not solely for those companies involved, but for the Nation.

We have at no point advocated only one port facility.

Mr. ECKHARDT. Well, I must say I am intrigued by your idea of encouraging additional development in connection with the energy corridor that you envisage, and I suppose we certainly will ultimately need it, but I do not think we ought to neglect the present refining capability and unless we put the port convenient to what exists, the refining capability in the Gulf Coast area, or at least put one of the offshore ports in that area, it would seem to me that we would neglect what we have got for some possible development in the future, do you not agree?

Mr. Bankston. In a general way, yes. You are right, we are primarily focusing on the fact that it should be built near the refinery capacity.

If for example, there were some genuine difficulties with the LOOP project, we would suggest then the alternative would be to come over our way and cut across Mississippi, or up through Mississippi and Tennessee and tie back into Capline further up the line.

Mr. Eckhardt. Thank you.

Mr. Downing. Thank both of you, very much.

The Chair notes with great pleasure that the former chairman of the full committee, the Hon. Edward A. Garmatz is in the committee room.

Chairman Garmatz was chairman of this committee for many years. During that time the Congress passed landmark maritime legislation.

He was one of the driving forces in the passage of the Merchant Marine Act of 1970, which will give this Nation a viable fleet on the high seas in the 1980's.

Chairman Garmatz, it is a great pleasure to have you here again.

At this time the committee will adjourn to meet again on July 10 at 10 a.m.

[Whereupon, at 11:45 a.m., the committee recessed, to reconvene at 10 a.m., Tuesday, July 10, 1973.]

OFFSHORE PORTS AND TERMINALS

WEDNESDAY, JULY 11, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:12 a.m., in Room 1334, Longworth House Office Building, the Hon. Leonor K. Sullivan (chairman of the committee), presiding.

The Chairman. The committee will come to order.

Today we are continuing our series of hearings on the deepwater offshore ports and terminals.

We have had several days of hearings before, hearing from various sections of industry, and people who are very much interested in these deepwater offshore ports, and we will continue this hearing for several more days.

Before I call the first witness, I would like to have made part of the record a letter from Mr. Robert E. Howe, president, Delaware Bay Transportation Co., N.Y., and the statement and tables that he has submitted to us will be made part of the record at this point.

[The documents referred to follow:]

June 15, 1973.

Mr. Robert E. Howe,
Delaware Bay Transportation Co.,
New York, N.Y.

Dear Mr. Howe: As you are aware, the Committee on Merchant Marine and Fisheries began hearings this week on the role that can be played in handling increases in the importation of foreign crude oil by the construction and operation of deep water offshore terminals. In view of the extensive planning which your organization has undertaken in this field, I would like to invite you to appear before the Committee on Tuesday, July 10, 1973, to discuss such matters relating to your project as you would consider to be of interest to the Committee. The purpose of the hearing is to develop total information on the subject, and I feel that you can provide the Committee with important information.

The hearings will begin at 10:00 a.m., in Room 1334, Longworth House Office Building, Washington, D. C. I am enclosing a copy of extract language from the Committee Rules relating to testimony, but I would like to add to the minimum 50 copy requirement prescribed in the rule, a request for 25 additional copies of the prepared testimony.

Any questions concerning the hearings may be addressed to Francis D. Heyward, Staff Counsel, Room 1337-A Longworth House Office Building, Washington, D. C. 20515, or by telephone at 202-225-3722.

The Committee looks forward with interest to your testimony.

Sincerely,

Leonor K. (Mrs. John B.) Sullivan,
Chairman.

Delaware Bay Transportation Co.,
New York, N.Y., June 21, 1973.

Mr. John B. Sullivan,
Chairman, House of Representatives, Committee on Merchant Marine and Fisheries, Longworth House Office Building, Washington, D.C.

Dear Mrs. Sullivan: Referring to your letter of June 15, 1973, I appreciate very much having your kind invitation to appear before your Committee at 10:00 A.M. on Tuesday, July 10, 1973 to discuss the proposal of Delaware Bay Transportation Company for a deepwater tanker terminal and onshore pipeline distribution system to be located in the lower Delaware Bay near Big Stone Beach.

Though the terminal is presently prohibited by the Delaware Coastal Zone Act of 1971, we appreciate the opportunity to better acquaint the Committee with the basic concept of the project and the possibilities of this site for a deepwater terminal.

Sincerely,

R. E. Howe,

DELAWARE BAY TRANSPORTATION COMPANY

A PROPOSED DEEPWATER TANKER TERMINAL AND ONSHORE PIPE LINE DISTRIBUTION SYSTEM

MAY 1, 1972

SUBMITTED TO THE COMMITTEE ON
MERCHANT MARINE AND FISHERIES
U. S. HOUSE OF REPRESENTATIVES
BY ROBERT E. HOWE, PRESIDENT
DELAWARE BAY TRANSPORTATION COMPANY

Background and Purpose

In 1957 - 1958 three companies, Cities Service Company, Gulf Oil Corporation and Sinclair Oil Corporation, formed the Delaware Bay Transportation Company and purchased approximately 1,800 acres of land near Big Stone Beach, Delaware to build an offshore tanker unloading facility and to construct adequate storage facilities onshore for the transshipment of crude oils via pipe line to the Philadelphia Refinery area.

The Big Stone Beach site was selected because of its proximity to the natural deepwater basin in the lower Delaware Bay. This location is ideal for a large tanker unloading facility from operational and, we believe, ecological viewpoints.

At that time, it was expected that crude oil shipments, from the U. S. Gulf Coast and particularly from overseas areas, would continue to increase rapidly to meet growing demands for oil products in the area served by the Delaware River Refinery complex, the major East Coast refining center.

Although the U. S. Army Engineers had an approved project at that time to deepen the Delaware River to a depth of 50 feet, it was recognized that even when deepened the tankers of 80,000/100,000 dwt. then being constructed still could not navigate the river to the refining area. Therefore, the Delaware Bay Transportation Company proposed to construct a marine terminal in the deepwater off Big Stone Beach to provide a viable solution to the problem.

The rapidly increasing worldwide use of mammoth tankers to minimize transportation costs together with the increasing dependence on offshore oil to meet crude requirements of the East Coast refineries make the need for a deepwater terminal even more critical today. Fixed unloading facilities in the lower bay to accommodate mammoth tankers would, we believe, also provide significant environmental benefits to the Delaware Bay area. Modern super-tankers have excellent safety records. The use of larger vessels would significantly lessen the danger of collisions inherent in the use of far greater numbers of smaller vessels to carry the equivalent cargo upriver and would reduce the risk of spills by minimizing lightering operations. Distribution by pipe line from the Big Stone Beach Terminal to the refineries provides additional environmental protection due to the reduction in river traffic.

U. S. and East Coast Energy Supply/Demand Balance 1970 - 1985

To put into perspective the energy requirements for the U. S. and then the East Coast for the next fifteen years, we have extracted pertinent information from a recently completed National Petroleum Council Study. This study was commissioned by the Department of Interior and represents the best composite forecasts from industry and government of 1970 - 1985 energy requirements assuming continuation of current national energy policies. Table I, attached, shows the U. S. Energy Supply/Demand Balance for 1970 - 1985. Table II, attached, shows the detailed U. S. Petroleum Supply/Demand Balance for the same period. In summary, these tables show that:

- U. S. petroleum supplies from domestic sources, assuming no basic change in Government policies, will remain relatively constant during the period 1970 - 1985.
- U. S. petroleum demand in 1985 will be approximately 1.8 times greater than that in 1970.
- U. S. self-sufficiency of petroleum supply will decline from a ratio greater than 75% to a level less than 45%.
- Total imports of foreign oil into the U. S. will have to increase by 3.9 million barrels per day, or over 100% between 1970 and 1975.
- The level of imports thereafter will have to increase substantially, reaching a projected level of 14.8 million barrels per day in 1985, about 4.3 times greater than the import level for 1970.

The projected levels of petroleum imports required in the 1970 - 1985 period confirm the critical need for new marine facilities capable of handling the Very Large Crude Carriers (VLCC's) that must be used to transport these volumes. While future discoveries of significant reserves of crude oil on the outer continental shelf of the East and Gulf Coast would supplement available domestic supplies, large volumes of imported foreign crude oil would still be required to meet the energy demand.

Turning to projected East Coast (District I) energy requirements, the NPC Study indicates that the East Coast (New England, Middle Atlantic, and South Atlantic States) presently consumes almost one-third of the nation's energy requirements and almost 40% of the petroleum products consumed nationwide. By 1985, the projected demand for energy fuels for just the East Coast is forecast to exceed the present demand for petroleum for the entire fifty states of the nation.

EAST COAST ENERGY DEMAND
(Mil. BPD Crude Oil Equivalent)

District I	1970	1980	1985
Petroleum	5.8	8.9	10.2
Natural Gas-Coal	4.2	4.2	3.5
Hydro-Nuclear	0.3	2.3	4.9
Total	10.3	15.4	18.6

MIDDLE ATLANTIC STATES -
PART OF DISTRICT I

	1970	1980	1985
Petroleum	2.6	4.0	4.5
Natural Gas-Coal	2.3	2.0	1.6
Hydro-Nuclear	0.1	1.1	1.9
Total	5.0	7.1	8.0

Virtually all of the petroleum requirements on the East Coast are supplied from sources outside the area--primarily by tanker and pipe line from refineries and producing fields in the Gulf Coast and from offshore imports. Table III, attached, details the East Coast petroleum supply/demand situation as it has existed from 1960 to 1970.

The East Coast petroleum demand over the last decade has increased about 220,000 barrels per day annually. Half of this growth was supplied from other districts and the balance from imports. Demand for petroleum products over the next fifteen years is forecast to increase 300,000 barrels per day annually. The ability of the industry to supply this increased East Coast demand from other districts will depend, primarily, on the availability of domestic crude and/or refined products from the Gulf Coast area.

Domestic production of crude oil, however, is not expected to increase significantly above present levels (see Table II) so that increasing amounts of water-borne foreign imports will be necessary to meet the growing demands on the East Coast requiring new deepwater unloading facilities and significant expansion of refining capacity and associated storage facilities.

U. S. Tanker and Terminal Requirements

The prospect of having to increase water-borne imports into the U. S. from 1970 to 1985 at rates of six to seven times the import rate of the 1960's adds a completely new dimension to U. S. supply logistics, particularly with respect to the size of tankers to be accommodated and the attendant port and storage facilities required.

Tankers in the international petroleum trade during the 1971 - 1985 period will generally range in 200,000 dead weight ton (dwt.) size or larger. Depending on the ship's design, these vessels will have a draft of 65 feet or more. Since there are no ports in the U. S. presently capable of handling vessels of this size, new deepwater terminals will be required to accommodate these foreign crude imports.

To demonstrate the rapid growth in tanker size, Figure I (Page 7) shows that at the end of 1971 there were more than 231 tankers above 150,000 dwt. in service. Additionally, another 334 vessels in this class were on order or under construction.

Refinery Expansions and Additions

U. S. refining capacity requirements in 1985 are estimated at more than 20 million barrels per day compared to 10.9 million barrels per day in 1970 as shown on Table II. To meet this 10 million barrel per day additional requirement for refining, capacity will necessitate refinery construction at a rate 2-1/2 times greater than the last decade. Since East Coast refineries presently supply less than 25% of petroleum requirements on the Eastern Seaboard, the changing supply outlook will necessitate considerable expansion of capacity relative to demand levels on the East Coast. These expanded facilities will be running imported crude transported in VLCC's which necessitates the need for a deepwater facility in the lower Delaware Bay.

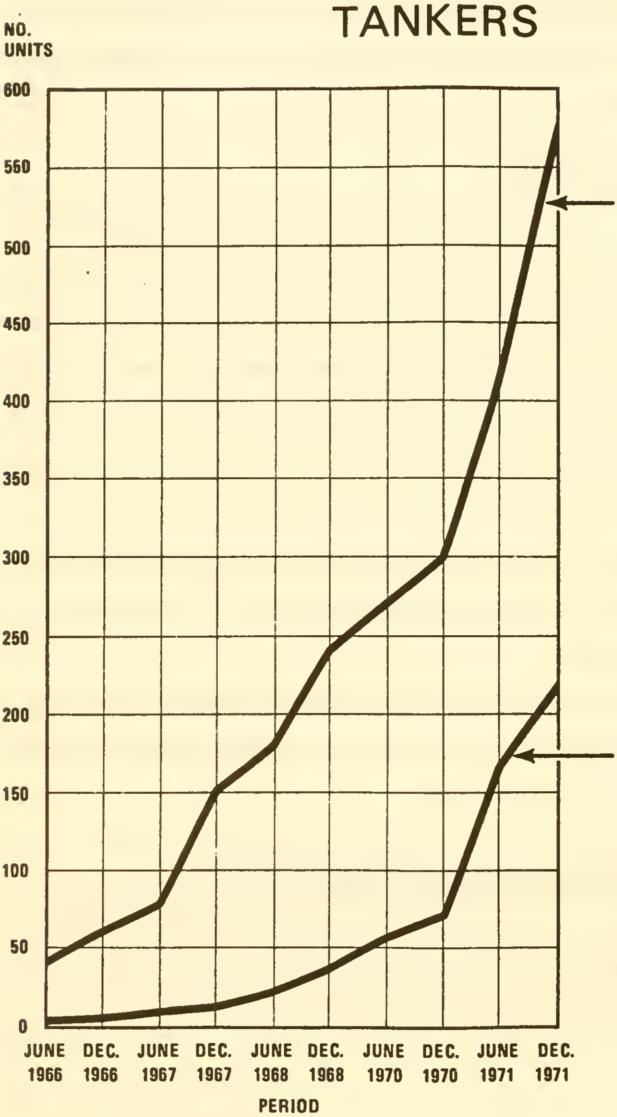
From the foregoing, it is apparent that additional refining capacity and attendant transportation facilities must be constructed on the East Coast soon to avoid a serious petroleum energy deficit.

Delaware Bay Transportation Company - Proposed Facilities

The present owners of the Delaware Bay Transportation Company are Atlantic Richfield Company, BP Oil Corporation, Cities Service Company, and Gulf Oil Corporation. Ten other companies have joined these four to explore

FIGURE I

VESSELS OVER 150,000 DWT TANKERS



TOTAL TONNAGE ON ORDER AND IN SERVICE
135,586,593 DWT
565 UNITS

TONNAGE IN SERVICE
50,835,956 DWT
231 UNITS

ABOVE NUMBERS
DO NOT INCLUDE OBOS

feasibility of a deepwater unloading facility off Big Stone Beach in the lower Delaware Bay and a pipe line distribution system to Philadelphia area refineries. The other ten companies are: American International Oil Company, Ashland Oil Inc., Continental Pipe Line Company, Getty Oil Company, Humble Oil & Refining Company, Mobil Oil Corporation, Phillips Petroleum Company, Shell Oil Company, Sun Oil Company and Texaco Inc.

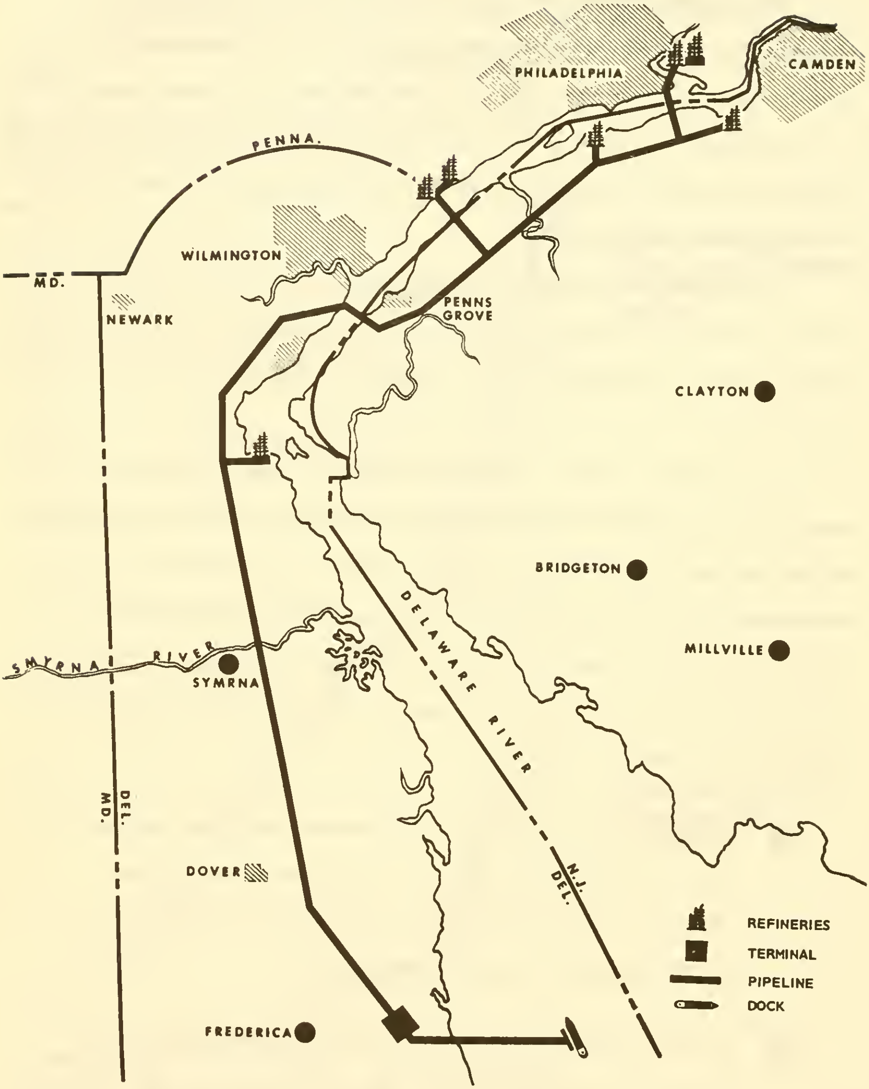
These fourteen companies represent a substantial section of the petroleum industry. Collectively, they have East Coast refining capacities of over a million barrels per day. This capacity plays a vital part in meeting East Coast energy needs.

After extensive study, these fourteen large companies with their own and consultant expertise (Table IV) have concluded that the best method of supplying current and future petroleum requirements to East Coast refineries from the standpoints of minimizing cost, and maximizing environmental safety is to construct the facilities shown schematically in Figure II (Page 9). The key elements of the Delaware Bay Transportation Company's proposed project are summarized as follows:

- The use of large VLCC's for the importation of near and long term petroleum requirements. Forecasted import volumes from the fourteen participant companies are 900,000 B/D in 1975, growing to 2,000,000 B/D in 1985.

- An offshore marine unloading dock approximately six and one-half miles off Big Stone Beach, Delaware in the existing deepwater

DELAWARE BAY PROJECT



basin of the Delaware River.

- Submerged pipe lines connecting the dock facilities to the tank storage installation on shore.
- Ultimately, about 21 million barrels of onshore tank storage located on the Delaware Bay Transportation Company's property at Big Stone Beach. Under this proposal, there will be no manufacturing facilities constructed on this property.
- An onshore underground pipe line from the storage facilities to the Philadelphia area refineries.

The feasibility of marine terminal facilities to accommodate VLCC's has been demonstrated by the successful operation of facilities such as those located at Bantry Bay in Ireland; Kagashima, Japan; and Chimu Wan, Okinawa.

General Environmental Design Consideration

The offshore dock facilities, the offshore pipe lines, the onshore storage and the distribution pipe line to the refinery area will be equipped with the latest and most sophisticated anti-pollution devices available to the industry. These facilities will be designed to meet all applicable codes and regulations dealing with construction, operational safety and air and water quality standards using the best equipment available.

Independent consultants, as required, will be used to provide knowledge and expertise to be certain that all safeguards have been taken to assure the minimum disturbance to the environment. Such experts will be utilized in the areas of marine biology, plant botany, noise and pollution abatement, archeology and other disciplines as may be needed. These consultants would also be used to provide advice relative to the ecological environment in the period before, during, and after construction of the facilities to assure complete consideration of pertinent, appropriate factors.

One example would be the use of consultants to make an ecological survey and profile of the area, including the waters of the bay, before operations were begun, to establish a base for environmental monitoring.

Specific Environmental Design Concepts

The following design concepts will be employed to assure that all the facilities to be constructed afford maximum pollution and environmental protection.

1. Dock Facilities

a. The projected design of three berths and the adequate sizing of offshore pipe lines will enable a ship's pumps to discharge at high rates without requiring high pump head pressures. Discharge at the dock will be through large diameter hydraulically operated unloading arms. Each arm will be equipped with quick disconnect couplings, enabling a vessel to be moved quickly away from the dock area in event of an emergency.

b. Adequate ballast handling and treating facilities will be provided.

c. Bunkering and ship's boiler/drinking water will be provided.

d. The petroleum unloading, ballasting and bunkering facilities will be designed as independent self-contained systems.

e. The ship's sea valves will be closed and lashed to insure that no discharges can be made into the bay during unloading, ballasting, or bunkering operations.

f. A tug will be standing by during unloading operation to deploy oil spill containment booms and provide fire fighting equipment, if either should be required. A supply of approved dispersants and absorbents will also be available on the dock.

g. Dock lighting will meet or exceed U. S. Coast Guard requirements. Traffic control systems and the latest radar and radio equipment will be installed; a Doppler System will be incorporated to provide as fine a control as is possible during berthing operation of a vessel. Infra-red sensors will also be used to assist in detecting any spills during night operations.

h. The International Oil Tanker and Terminal Safety Guide (I.O.T.T.S.G.) recommendations will be applied at the terminal as the minimum operating standards.

2. Offshore and Onshore Pipe Lines

a. Existing industry specifications and codes will be used for the design, construction and operation of these pipe lines. These specifications and codes have complete industry and government acceptance and would include those of the American Petroleum Institute (API), the American Society of Testing Materials (ASTM) and the pipe line design codes of the U. S. Department of Transportation (DOT).

b. The onshore pipe line will be constructed along existing right-of-ways where feasible, avoiding the coastal marshlands wherever possible.

c. The onshore and offshore lines will be buried at depths sufficient to provide ample protective cover. Before being laid, the line pipe will be pressure tested and X-rayed to detect and correct any flaws. After installation, the lines will be hydrostatically tested at pressures above operating pressures.

d. The pipe will be externally coated to prevent corrosion. Additionally, cathodic protective devices will be installed to prevent corrosion during operation.

e. Automatic shut-off valves at appropriate intervals will be installed and the line continuously monitored for quick shut down of the facilities in event of emergencies.

3. Onshore Storage Facilities

a. The onshore storage tanks will be welded steel with floating roofs to minimize emission of hydrocarbon vapors.

b. The tanks will be enclosed with dikes to contain any possible oil spill. Storm waters entrained in the dike area will be filtered through a separating facility before release to remove any oil contamination.

c. A foam system will be provided to blanket the tanks with foam in case of fire. Appropriate fire codes and regulations will be followed in locating tanks and designing dikes and fire foam facilities.

d. Ballast treating facilities will consist of gravity settling, followed by chemical and air flocculation. The treated ballast water will meet Federal and State of Delaware water quality standards before any release of treated ballast is made.

e. Fresh water usage at the terminal will be minimal.

f. Proper and adequate sanitary facilities will be provided including facilities necessary to receive ship generated sewage and waste.

4. Environmental Aspects of Marine Traffic

We believe the use of VLCC's will actually lessen the risks of spills and marine emergencies throughout the length of the Delaware River. Two of the major reasons for this are:

a. The use of larger vessels significantly lessens the danger of accidental collisions inherent in the use of far greater number of smaller vessels to carry the same equivalent cargo. The implementation of this project will result in a substantial reduction of smaller sized tanker traffic along the Delaware River as shown in Figure III, Page 16.

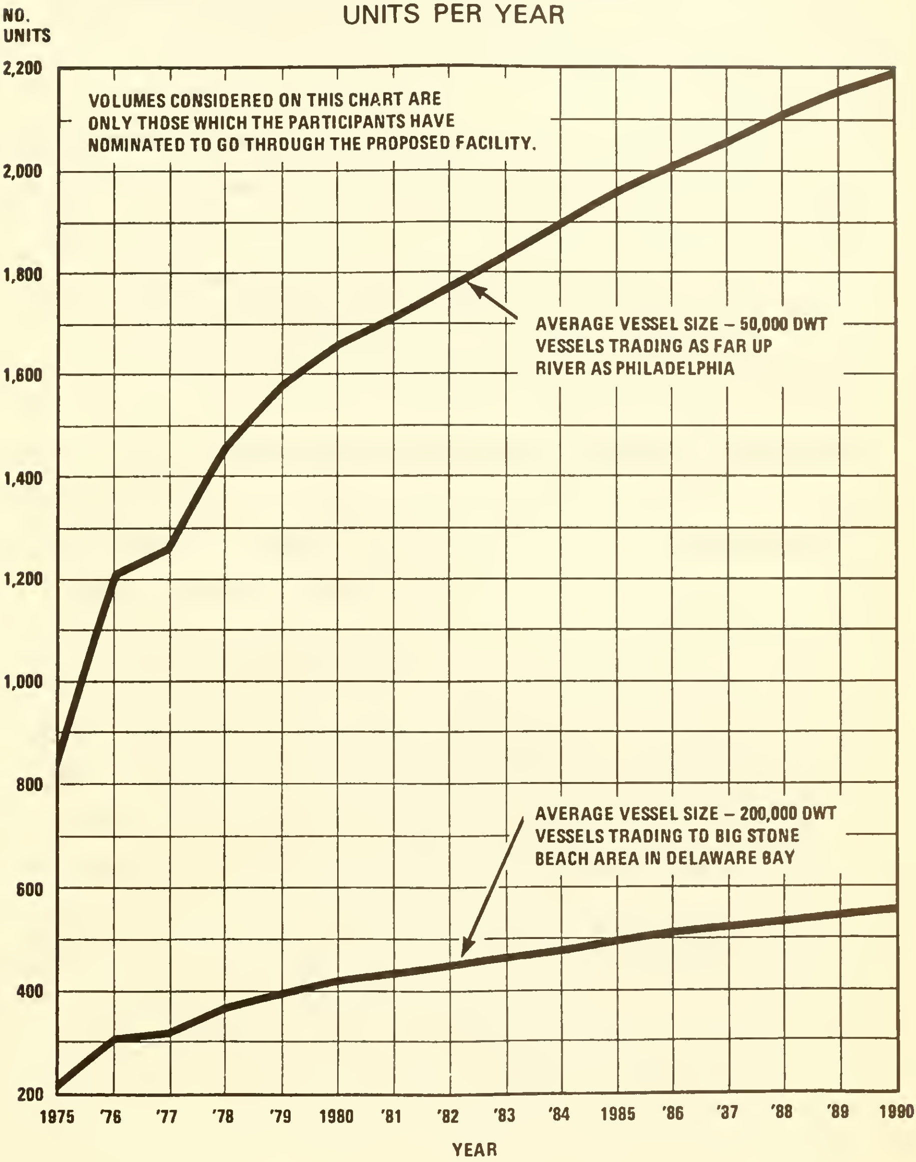
b. Large tankers mean fewer tankers with less possibility of collisions and groundings. Fewer tankers mean fewer cargo transfers. The project would confine the VLCC's to a specific part of the lower Delaware Bay rather than requiring these tankers to traverse the entire area. This single location can be most effectively managed and supervised.

Economic Benefits from the Project

The Delaware Bay Project is designed to realize the economies of large scale long distance transportation of crude oil in VLCC's. As such, the primary economic benefit of this project to both the oil industry and the East Coast consumer is the potential for minimizing the transportation cost of foreign oil to East Coast refineries. These potential savings in transportation are particularly significant considering the recent and projected increases in the cost of foreign oil.

FIGURE III

TANKER TRAFFIC ON DELAWARE RIVER AFFECTED BY DELBAY FACILITY UNITS PER YEAR



Of immediate benefit to the State of Delaware is the substantial increase in the tax base for the state and surrounding counties. Taxes generated from this facility can be utilized to provide various public and social services for all citizens in the area.

Expenditures for ship's services and supplies for vessels arriving at Big Stone Beach are estimated to generate requirements for local services of approximately $300,000 annually per vessel or a total of $20 to $30 million per year by 1985 for vessels unloading at the terminal. It is estimated that expenditures in the area for the operation and maintenance of the facilities will be initially $4,000,000 annually increasing to $8,000,000 by the late 1980's.

Alternatives to Delaware Bay Transportation Company Project

In reaching the conclusion that the lower Delaware Bay deepwater unloading facility is necessary, the participants reviewed and evaluated several alternatives.

1. Status Quo: Maintain the status quo condition despite indications that VLCC's will be required to transport imported crude to the area. This means bringing in VLCC's as far up the bay as possible, anchoring and lightering their cargo to smaller tankers and/or large barges. The potential for this practice is limited, and in any case, it would involve a great increase in traffic up the river as well as a greater potential risk of oil spills in the lightering operations.

2. Delaware River Dredging: The present navigable channel is dredged to 40 feet throughout most of its length. The Army Corps of Engineers spends approximately $6 million annually to maintain the channel at this depth.

Recent studies by the Corps of Engineers have shown that the probable maximum channel depth would be only about 50 feet due to rock constraints. The cost of dredging to the 50 foot depth is estimated to be in excess of $750 million. Even with this 50 foot depth, vessels in excess of 120,000 dwt. could not be accommodated because of their length and their inability to navigate bends in the channel.

3. Offshore Mono-mooring Facilities: A series of Single Point Mono-moorings (SPM) could be installed out to sea and away from the coastline. Because of relatively rough seas off the U. S. Atlantic Coast north of Hatteras, experience indicates there will be a high percentage of lost time when vessels will be unable to moor to the SPM for discharging cargo and thus this is not an attractive economic alternative to this project.

4. Offshore Man-made Islands: The U. S. Department of Commerce has been studying the U. S. shoreline as to feasible locations for deepwater port facilities. One such location is near the mouth of the Delaware Bay in Federal waters. From the preliminary study data that has been made available, it is evident the capital requirements are far in excess of the proposed Delaware Bay Project and would thus be more difficult to economically justify. Additionally, an offshore island would not reduce bay and river traffic unless the additional cost of the pipe line distribution system can be incorporated, further reducing the economic feasibility.

5. Locations Outside of the U. S.: There are several locations outside the Continental U. S. that have or could be developed as transshipment terminals to handle VLCC's. Potential installations exist in Eastern Canada and the Caribbean.

   While such transshipment terminals could supply the petroleum requirements of the U. S. East Coast, there are major disadvantages including:

   a. The traffic on the upper Delaware River would not be reduced.

   b. The delivered cost will be higher due to multiple handling through a terminal and delivery in smaller size vessels.

   c. The U. S. would continue to be dependent upon foreign deepwater port facilities controlled by other countries.

* * * * * * * * *

In summary,

1. Deepwater port facilities to accommodate VLCC's are a necessity for economics, environmental, and national security reasons in order to meet rapidly increasing demands for petroleum along the East Coast.

2. The deep and sheltered water of the Delaware Bay in proximity to the refining center of the East Coast offers the best and safest site for such a terminal.

3. We firmly believe that the privately financed deepwater dock, tankage and pipe line to refineries as proposed by the Delaware Bay Transportation Company offers the best solution to the problem of handling tanker shipments in the Delaware River that are and will continue to increase to meet forecasted energy demands.

Attachments

May 1, 1972

TABLE I

U. S. ENERGY SUPPLY - DEMAND 1970-85
(Mil BPD Crude Equivalent)

	1970	1980	1985
Petroleum	14.4	22.3	25.7
Natural Gas	11.0	10.6	10.5
Coal	6.2	9.4	10.9
Nuclear	0.1	4.5	10.2
Hydro	1.2	1.6	1.7
Total Demand	32.9	48.4	59.0

ENERGY SUPPLY

	1970	1980	1985
Domestic			
Petroleum	10.9	11.5	11.1
Natural Gas	10.6	8.8	7.5
Coal	6.2	9.4	10.9
Hydro-Nuclear	1.3	6.1	11.9
Total Domestic	29.0	35.8	41.4
Foreign			
Petroleum	3.5	10.9	14.6
Gas	0.4	1.8	3.0
Total Foreign	3.9	12.7	17.6
Total Supply	32.9	48.5	59.0

TABLE II

PETROLEUM DEMAND AND SUPPLY
TOTAL UNITED STATES--INITIAL APPRAISAL
(MB/D)

Item	Actual			Estimated		
	1960	1965	1970	1975	1980	1985
Domestic Demand	9,807	11,523	14,728	18,346*	22,329*	25,976*
Exports	202	187	258	235	220	210
Total Demand	10,009	11,710	14,986	18,581*	22,549*	26,186*
Processing Gain, etc.†	- 146	- 220	- 343	- 420	- 500	- 600
Stock Change, All Oils	- 83	- 8	+ 103	+ 9	+ 11	+ 14
Required New Supply	9,780	11,482	14,746	18,170	22,060	25,600
U.S. Production:						
Crude and Condensate:						
Lower 48‡	7,035	7,804	9,631	8,930	8,430	8,110
Alaskan North Slope	---	---	---	600	2,000	2,000
Subtotal	7,035	7,804	9,631	9,530	10,430	10,110
Natural Gas Liquids, etc.§	930	1,210	1,697	1,550	1,330	970
Syncrude from Oil Shale	---	---	---	---	---	100
Total Production	7,965	9,014	11,328	11,080	11,760	11,180
Imports:						
Crude Oil	1,015	1,238	1,324	4,090	6,550	10,220
Residual Fuel Oil	637	946	1,528	2,200*	2,800*	3,100*
Other Products	163	284	566	800	950	1,100
Total Imports	1,815	2,468	3,418	7,090*	10,300*	14,420*
Total Canadian Overland	120	329	766	950	1,300	1,900
Total Waterborne	1,695	2,139	2,652	6,140*	9,000*	12,520*
Imports as % of Required Supply	18.5	21.5	23.2	39.0*	46.7*	56.3*
Crude Runs to Stills	8,067	9,043	10,870	13,600	16,950	20,400

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* Excludes adjustments to demand and supply later made by the Coordinating Subcommittee (see p. *xxiv* of Extract from Volume One included in this Volume Two).

† Includes unaccounted-for crude.

‡ Includes Southern Alaska.

§ Includes other hydrocarbons and hydrogen refinery input

Source:National Petroleum Council-U.S. Energy Outlook, Nov. 1971

TABLE III

U. S. EAST COAST SUPPLY - DEMAND 1960-70
(000 BPD)

	1960	1970
Demand	3,820	5,996
Processing Gain & Stock Change	(21)	20
New Supply	3,799	6,016
Local Production	54	56
Receipts from Other Districts:		
Crude	520	681
Products	1,853	2,832
Total	2,373	3,513
Imports:		
Crude	667	579
Products	705	1,868
Total	1,372	2,447
Total Supply	3,799	6,016

TABLE IV

SUMMARY OF OUTSIDE CONSULTANTS USED IN FEASIBILITY STUDY

- Roy M. Henwood Associates of Millburn, N. J. engaged to make preliminary design studies. These consultants also made a hydrographic study of the area, topographic survey of the land and subsoil test borings onshore as well as offshore. The cores were given to the Geological Department, University of Delaware. Preliminary study costs were $200,000.

- Descon Engineers (now Divcon) of Houston, an internationally known group to study the cost and design of alternate type of offshore terminal facilities.

- A. H. Glenn and Associates of New Orleans to conduct research and analysis of meteorological and oceanographic factors in the lower Delaware Bay which might affect the design of the offshore facilities and the operation of the tankers at these terminal facilities.

- M. B. Gardner Company, Roselle Park, N. J., consulting engineers on thermodynamics.

- Additionally, the U. S. Army Corps of Engineers made available results of soundings at the proposed marine terminal area and out to sea, and rechecked existing depth charts.

The CHAIRMAN. Our first witness this morning is an ex-member of this committee, and very able member from the State of Alabama, the Hon. Jack Edwards.

STATEMENT OF HON. JACK EDWARDS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA

Mr. EDWARDS. Thank you so much Madam Chairman, for that kind introduction. I am appearing today to present my thoughts on the need for deepwater ports in America and on the corresponding need for the Congress and this committee to continue to exercise leadership in this important area. I commend the chairman and the members of this committee for the interest you have already shown in the subject of deepwater port facilities.

Our acute energy shortage has been brought to the attention of every American in recent months. We have learned just how much we rely on petroleum products to keep the country and the economy moving. We have seen how our fuel needs, our balance of payments, the strength and stability of the dollar, the health of our domestic economy, and our national defense posture are so tightly interwoven that if one strand frays, all the others are affected.

We rely heavily on oil imports to satisfy our energy needs. This reliance will not diminsh in the foreseeable future, and many experts believe it will increase significantly. It is an urgent priority, then, that the United States have the best, most economical port system to handle oil imports.

Deepwater ports will be needed because the fuel will reach the United States in supertankers of unprecedented size. Since our natural ports cannot handle these huge vessels, we must construct offshore terminals which can cope with supertankers. The Maritime Administration reports that if we do not build our own deepwater port facilities, we will have to rely on transshipment through neighboring foreign terminals, such as in Canada, the Bahamas or elsewhere. This would heighten our already dangerous reliance on outside sources and our unfavorable outflow of dollars.

Mr. Chairman, I believe the need for deepwater ports is both evident and immediate. I urge this committtee to move expeditiously toward legislation which will accelerate the construction of superports. We need legislation which insures the environmental soundness of ports, setting up stringent but reasonable environmental criteria to protect our beaches and marine life. Just as the secondary economic benefits of deepwater ports (refineries, general industrialization, petrochemical plants) must be considered, so must the corresponding secondary environmental impact be evaluated.

While it may not be the specific task of this committee to consider the sites for deepwater port facilities, I will touch briefly on the advantages of the Ameraport, off the coast of Alabama and Mississippi. A July report of the U.S. Army Corps of Engineers found after extensive study that the development of deepwater ports along the gulf coast is economically and environmentally feasible, that in fact two or three ports in the gulf coast area are economically desirable.

The Ameraport off Alabama and Mississippi is uniquely within the gulf coast area. Transportation costs to the southeastern and eastern States would be reduced. Completion of the Tennessee-Tombigbee Waterway and a deepwater port in the Gulf of Mexico should fall into approximately the same construction-completion time frame. The Tennessee-Tombigbee Waterway, joining forces with the waterways, highways, and railroads of the area, will connect the Gulf of Mexico with mid-American by a strong, reliable, balanced transportation system.

Ameraport embodies sound national security since its location off Alabama and Mississippi would disperse refineries rather than crowding them into areas already heavily populated with these facilities. Ameraport provides better nautical safety and reduced possibility of oil spills by minimizing the traffic of supertankers in areas with numerous oil and gas production platforms.

Many other arguments could be offered in favor of deepwater ports generally and Ameraport specifically. But perhaps the important entreaty to make to this committee is that a bill be reported in the near future which will provide the legislative fuel to drive the deepwater port issue to the point that the United States leads the world in superport capability and efficiency.

The Chairman. Thank you for an excellent statement.

Mr. Edwards. Thank you, Madam Chairman.

The Chairman. Our next witness this morning is Mr. Edwin M. Hood, president, Shipbuilders Council of America.

Mr. Hood, would you come to the table?

I think your statement is such that if you wish to just read it, you may go ahead, and then we will have some questions.

STATEMENT OF EDWIN M. HOOD, PRESIDENT, SHIPBUILDERS COUNCIL OF AMERICA, WASHINGTON, D.C.

Mr. Hood. Madam Chairman, members of the Committee, your invitation to submit pertinent views on shipbuilding in the context of your current hearings on the subject of deepwater offshore terminals is very much appreciated. In using the generic term of deepwater offshore terminals, it is assumed that either artificial islands, single-point mooring systems, fixed platforms or floating platforms to facilitate the importation of oil are intended. We leave to others, with special expertise, the task of evaluating the relative merits and economics of these various types of terminals.

Needless to say, my comments today reflect the views of our membership, particularly those now engaged in, or contemplating, the construction of very large crude carriers (VLCC's) of 200,000 dwt the construction of very large crude carriers (VLCC's of 200,000 dwt and over.

All projections we have seen indicate that the present tendency toward large tankers will continue indefinitely into the future. The fundamental economics of ocean transportation and the increasing, almost universal, demand for energy supplies are shaping and propelling this trend.

Here in the United States, with some degree of reliance on imports of crude oil an dpetroleum products from foreign sources unavoidable, these same factors are having a profound influence.

Whereas, in recent history, with the exception of the SS *Manhattan* of 110,000 dwt delivered in late 1962, American shipyards were building small tankers in the range of 30,000–50,000 dwt, the orderbook today for the U.S. shipbuilding industry includes tankers up to and including 265,000 dwt.

Additionally, there are several pending contracts, now under negotiation, involving 380,000 dwt tankers. If these materialize, it should be noted that a new shipyard facility will come into being at Galveston, Texas.

The world tanker fleet is forecast to increase, on a tonnage basis, by 4.7 percent annually until 1990, but the profile of that fleet will change considerably. In 1975, it has been predicted that 47 percent of the tonnage of these tankers will be in vessels of 115,000 dwt and over. The comparable figure in the same size category for 1980 has been placed at 64 percent, and for 1990 at 76 percent.

At the moment, 13 tankers in this category are under construction in the United States, and 520 are being built in the shipyards of other countries.

As has been frequently noted, approximately 5 percent of all U.S. oil imports, by volume, are transported in American-flag, American-built bottoms, and the balance—about 95 percent—is carried by foreign-flag, foreign-built tankers. That ratio has prevailed for some while.

Even with the passage of legislation to reserve up to 30 percent of U.S. oil imports for U.S. tankers, which has been sponsored or cosponsored by 136 members of the House of Representatives—including the chairman and many members of this distinguished committee, it is clear that a considerable number of foreign-flag tankers will long be bringing oil to our country.

It would seem equally clear that the availability of either shoreside or offshore terminal facilities to accommodate either American-flag or foreign-flag VLCC's is important to the transportation matrix surrounding the importation of energy supplies in both the near term and long term future.

Most U.S. ports by reason of channel depths, however, are seriously limited in the sizes of tankers which can be handled under full load. Few can accommodate ships over 65,000 dwt fully loaded. None can handle fully loaded tankers of over 90,000 dwt. VLCC's of over 200,000 dwt require 60 to 100 feet of water for operation, and only in the Puget Sound area of the Pacific Northwest would operation of these supertankers be possible.

Ecological, geological, geographic, and economic implications, in combination, preclude the deepening of channels to facilitate VLCC's of increasing dimensions. Thus, the offshore deepwater terminal takes on a greater significance as the Congress and policymakers seek to forge a realistic and effectual national energy policy.

It is the consensus of our membership that the construction and operation of some form of offshore terminals are inevitable. We recognize that jurisdictional issues must be appropriately resolved and that environmental concerns must be satisfactorily dispelled.

In these respects, it is the position of our organization that future energy needs and the understandable apprehensions of ecologists are not irreconciliable: they can, and must, be brought into consonance—in the public interest. But, while our Nation searches for a rational balance, the energy problems become more critical, and the mood of the American consumer will not forever remain quiescent. The cynical slogan "let them freeze in the dark" will not find acceptance with the American people. But, to use an old saw, time is fleeting.

Under existing circumstances, tanker experts see the first U.S. offshore port facility being located in the Gulf of Mexico sometime after 1975 and on the East Coast only after 1980. They see Gulf imports of crude oil rising accordingly from 76,000 barrels per day in 1971 to 4,640,000 barrels per day in 1980, and refining capacity increasing substantially in that area.

If these forecasts prove correct, about one-half of U.S. crude oil imports would flow to the Gulf area in 1980. The percentage to be transported by American-flag, American-built VLCC's to offshore deepwater terminals, wherever located, will in all probability be determined by Congressional approval of the legislation mentioned earlier, and we earnestly hope that approval will be forthcoming in the present session of the Congress.

Depending on the type of offshore terminal employed, the related issue of transshipment to shoreside facilities by smaller tankers or tug-barge systems is also of keen interest to U.S. shipbuilders who stand ready to provide these feeder vessels. There would, in addition, appear to be a market for similar vessels to transport petroleum products from refineries now under construction, or planned in the Grand Bahama Islands and Newfoundland.

In light of the potentials for tanker requirements inherent in the availability of offshore deepwater terminals, in light of the prospects for a reservation of a certain percentage of increasing oil imports for American bottoms, and in light of a general improvement in the posture of the American merchant marine resulting from enactment of the Merchant Marine Act of 1970, U.S. shipyards are continuing to create and expand production capacity to reduce labor intensiveness and to increase output.

During the 1967–1972 period, nearly $500 million have been expended for capital improvements. It is believed that more than $300 million have already been authorized or committed for other new shipyard facilities in the next few years.

As of June 1, there were 83 merchant vessels totalling 4,136,171 dwt on order or under construction in American yards. Included are 34 tankers totaling 2,881,900 dwt in seven shipyards. Orders for another eight tankers, totaling 1,113,800 dwt were placed at the end of last month. Two yards have contracts for VLCC's of 225,000 dwt and 265,000 dwt, and nearly 70 percent of the tanker tonnage now on order involves vessels of 120,000 dwt and over—vessels whose capability can be fully utilized in no usual U.S. ports.

Tanker building capacity in the United States is anticipated to expand further from the present annual level of approximately 1,500,000 dwt to considerably more than 3 million dwt in 1978 and later. Some of this capacity will be devoted to the construction of VLCC's and a maximum eventual output of six or seven VLCC's annually, would not seem unrealistic.

The capacity of U.S. private ship repair yards to drydock VLCC's in most regions of the country, on the other hand, is presently limited. No facilities are normally available on the East Coast, through a drydock capable of lifting 120,000 dwt tankekrs is contemplated at Baltimore, Md. None are available on the Gulf Coast, though a repair dock, designed to handle VLCC's up to a maximum of 380,000 dwt is planned at Galveston, Tex.

On the West Coast, most tankers up to 150,000 dwt, and some as large as 230,000 dwt can now be drydocked at San Francisco, Calif. With the increasing size of tankers and the development of offshore terminals, it does not seem illogical to anticipate that repair facilities in the United States will keep abreast of these trends. Shipyard managements, you can be sure, are following this situation with a view toward future probabilities.

In summary, we draw three conclusions: (1) More oil will be brought to the United States in larger tankers, (2) compatible offshore terminals will be necessary, and (3) changing conditions of oil transportation present an opportunity for U.S.-flag tankers and for U.S. shipbuilding and ship repairing—opportunities which appear to be enhanced by the provisions of the Merchant Marine Act of 1970, and devaluation of the dollar—opportunities which can help in minimizing the persistent imbalance of international payments.

Thank you.

The CHAIRMAN. Thank you very much, Mr. Hood.

This brings up some of the problems that I think are troubling many of us.

You mention that we are eventually going to have to go to these very large carriers, and you mention that if proper legislation is passed there will be a new shipyard to handle the very large tankers in Galveston, Tex., and that there is already one on the West Coast.

Now, how many others in this country, that you know of, are capable at the moment of building 250,000–265,000 deadweight ton tankers?

Mr. HOOD. At the moment the shipyard at Brooklyn, N.Y., has under construction 225,000 deadweight ton tankers.

I believe the size limitation there is dictated by the breadth of the building dock.

At Sparrows Point, Md. tankers of 265,000 deadweight tons are under construction in a new building dock, the capability of which I believe can approach 300,000 deadweight tons.

At Quincy, Mass., facilities are available to build 225,000 deadweight tankers.

I have already mentioned the prospective facility at Galveston, Tex. To construct VLCC's of 380,000 and above.

I would think, and Mr. Downing may want to supplement my remarks, but I would think that the Newport News, Va., shipyard facility which, incidentally is the largest in the world, would be capable of handling the construction of the VLCC's.

I would also think eventually the shipyard facility at Pascagoula, Miss., would be able to build VLCC's.

The CHAIRMAN. But not now?

Mr. HOOD. Not at the moment. I should add, Madam Chairman, that I am not privy to the management and marketing plans of the individual shipyards, and that is proper. They may have some different ideas as to future potentials and capabilities.

The CHAIRMAN. I am thinking of the possibility for orders might within this present time.

Do you know how long it takes, approximately, to build a tanker of this size?

Mr. HOOD. The best illustration I can give is perhaps the 265,000 deadweight ton tankers on order at Sparrows Point, Md. They were contracted for in June of 1972, and the first ship is scheduled for delivery in April of 1975.

The CHAIRMAN. For how many?

Mr. HOOD. The first of three ships is scheduled for delivery in April of 1975.

The second ship is scheduled for delivery in September of 1975, and the third in March of 1976.

The CHAIRMAN. Is this the normal length of time that it takes from the time they are started?

Mr. HOOD. This schedule is of course predicated upon previous commitments for the building dock.

That shipyard is also constructing four 120,000 deadweight ton tankers. They are coming from the same facility, and these involve earlier contracts.

Earlier contracts have a bearing on the scheduling of production and delivery of subsequent awards in any shipyard.

The CHAIRMAN. Would you have the knowledge of the additional time that it takes to build something very large, the 250,000–265,000 deadweight tonners in comparison with these, the others you mentioned? I think you said that 520 are being built in other countries.

Mr. HOOD. Yes, 520 are being constructed abroad, and there are 13 in this country under construction.

The CHAIRMAN. And that is the 115,000 deadweight tonner, approximately?

Mr. HOOD. And above, yes.

The CHAIRMAN. Does it take much longer to build the larger tanker in comparison with those of half their size?

Mr. HOOD. A larger tanker is basically a structural steel operation. It does not have all of the refinements and sophistication of an LNG tanker, for example, and a reasonable estimate of production and delivery time would be 2 years maximum. This time period could be improved under certain circumstances.

The CHAIRMAN. The reason I ask that is in your statement on page 4 you said that under existing circumstances we could see the first offshore facility completed about 1975.

Mr. HOOD. Some time after 1975.

The CHAIRMAN. So if these tankers are started very quickly, there is a chance that maybe the smaller ones would be built by 1975, but the larger ones would still have almost a year to go before they would be able to use those ports.

Mr. HOOD. We have looked at the so-called preference legislation, Madam Chairman, from a variety of standpoints. Naturally various sizes of tankers will be required and involved.

Starting from the fleet that is presently available, adding to it the expected deliveries from the shipyards, including the tankers I have mentioned this morning, we see no serious difficulty in meeting the requirements of the proposed legislation: A tanker capability to carry 25 percent of U.S. oil imports by 1975.

The CHAIRMAN. From the testimony we have had, one thing that was stressed was when these offshore ports are built, if we do not have the larger tankers, there is going to be so much traffic that there would be greater danger of accidents and spills, and so forth.

Mr. HOOD. As an increasing amount of oil imports are brought to this country as inevitably must occur, the shipbuilders of this country will be moving more in the direction of building large tankers.

The CHAIRMAN. And yet we will need smaller ones to come from the deep sea port into the shores, because they are not all going through the pipelines?

Mr. HOOD. That is correct.

The CHAIRMAN. I think I have some other questions, but I will ask them later.

Mr. Downing?

Mr. DOWNING. Thank you, Madam Chairman.

Mr. Hood, do you foresee the day when we will have a 1 million ton tanker?

Mr. HOOD. From all I have observed, Mr. Downing, I would have to conclude that a 1 million ton tanker is technically feasible. Whether or not it will come into being, I cannot say.

I read in the trade journal where Mr. Aristotle Onassis is having his engineering department at the present time design a 1 million ton tanker.

Mr. DOWNING. And I understand there are several ships contemplated by the Japanese in the range of 500,000 tons.

Mr. HOOD. Yes, sir. I believe the largest tanker on order now is 477,000 deadweight tons.

Mr. DOWNING. What depth would a 500,000 ton tanker require?

Mr. HOOD. It would require more than 100 feet of water.

Mr. DOWNING. Well, these offshore ports, according to the testimony we have had previously, are in the 100 to 110 feet of water. That would not be enough for a tanker above 500,000 tons, would it?

Mr. HOOD. I am not sure of the answer to that question, Mr. Downing, because I just have not studied the characteristics of the so-called ultra-large vessels.

Mr. DOWNING. Tell me, where are these huge tankers loaded? Are they loaded from offshore ports?

Mr. HOOD. In most cases, yes, and in many cases through a "vessel" feeder system.

Mr. DOWNING. Do you have many experience tables on those offshore ports, how they have worked out ecologically?

Mr. HOOD. The Maritime Administration had a study done on the subject of offshore terminals, sometime ago. I have before me, the summary of that endeavor, entitled "Feasibility of a North Atlantic Deepwater Oil Terminal."

Mr. Downing, some analysis of environmental effects of these kinds of offshore operations was done. One experience is cited, and if you desire, I will be happy to read it. It is a very short paragraph in the report, and it relates to the spillage question.

Mr. DOWNING. The chairman tells me we will have witnesses later on who can deal with this point, so I will not ask you to do that.

Thank you very much, Mr. Hood.

The CHAIRMAN. Mr. Forsythe?

Mr. FORSYTHE. Thank you, Madam Chairman.

Mr. Hood, the technology of these very large tankers, do you have an opinion as to the environmental safety of the design that is now being employed?

Do we have the technology to build really safe larger tankers from an environmental point of view.

Mr. HOOD. Yes, the technology is available. But the certainty of zero spillage of oil in the oceans and waterways, Mr. Forsythe, is probably a noble dream.

Mr. FORSYTHE. I am concerned about minimizing to the greatest extent possibly any spillage. If we have the technology, do we also have industry that is building to that technology, and if not, why not?

Mr. HOOD. There is a good answer to your question under present day circumstances. As stated a moment ago we do have the technology to minimize spills. But, as mentioned in my statement, 95 percent of the oil coming into this Nation is brought by the ships of other countries who observe differing standards of design and construction, differing standards of environmental requirements, and so forth.

As I am sure this committee is aware, various pollution abatement standards have now been proposed in this country as the result of the enactment of the Ports and Waterways Safety Act of 1972, which would require double bottoms, segregated ballast tanks, and other features. These are proposed for the United States.

There is no present assurance that these same standards will prevail throughout the balance of the world, Mr. Forsythe, and to the vast number of tankers carrying U.S. oil imports.

However, there is a conference scheduled in London in October under the auspices of IMCO which hopefully will resolve this question in a universal sense so that all vessels entering U.S. waters will have the same requirements, observe the same requirements, and the possibility of spillage will be minimized for all.

Mr. FORSYTHE. I believe both the bills being considered by this committee, and the administration's bill, attempts to get at this problem by requiring that any tanker delivering oil to the U.S. facility will have to abide by our standards over and above whatever IMCO may well come up with.

Mr. FORSYTHE. Do you think this would be essential?

Mr. HOOD. Yes, sir, very much so.

Mr. FORSYTHE. Thank you very much.

Thank you, Madam Chairman.

The CHAIRMAN. Mr. Anderson?

Mr. ANDERSON. Thank you, Madam Chairman.

Mr. Hood, if the Alaska pipeline goes down to Valdez, what size tankers would probably be taking the oil from Valdez?

Mr. HOOD. If I remember my figures, Mr. Anderson, the size ranges are 45,000 to 120,000 deadweight. I can supply for the record a breakdown of sizes, if you so desire.

Mr. ANDERSON. I had thought they were going to be much larger than that. But, you feel that they would be the smaller tanker, then.

Mr. HOOD. I am drawing on a study that was done for the Department of Commerce, and announced early last year I believe.

[The following letter was submitted by Mr. Hood, for inclusion in the record at this point:]

SHIPBUILDERS COUNCIL OF AMERICA,
Washington, D.C., July 17, 1973.

HON. GLENN M. ANDERSON,
House of Representatives,
Washington, D.C.

DEAR MR. ANDERSON: At the July 11, 1973 hearing of the Committee on Merchant Marine and Fisheries devoted to deepwater offshore terminals, you asked me about the sizes of tankers that might be employed in transporting crude oil from Valdez, Alaska, to West Coast ports upon completion of the Trans-Alaskan Pipeline System (TAPS), and I subsequently find, after consulting available records, that my answer was incomplete.

In a 1971 report on "Economic Effects of Opening the Oil Reserves of Alaska Through the Trans-Alaska Pipeline System," the Bureau of Domestic Commerce of the Department of Commerce included an estimate of the total number of ships by size required for Valdez/West Coast operations as follows:

250,000 dwt tankers	8
120,000 dwt tankers	16
90,000 dwt tankers	1
80,000 dwt tankers	2
75,000 dwt tankers	4
70,000 dwt tankers	6
60,000 dwt tankers	2
45,000 dwt tankers	2
Total	41

These figures come from a Price Waterhouse & Co. study for Alyeska Pipeline Co. entitled "Marine Transport System—Valdez to West Coast Ports." The Commerce Department document further indicated that eight of the above 41 tankers will come from the existing American-flag, American-built fleet and that "the remaining 33 will be built in U.S. shipyards."

You were quite correct in your impression that some tankers larger than 120,000 deadweight are envisioned for this service, and I apologize for my faulty recollection.

With warm personal regards always, I am

Cordially,

EDWIN M. HOOD, *President.*

Mr. ANDERSON. In your suggested offshore terminals, how far offshore do you presume these terminals would be? Would they be out beyond the 3-mile limit in most cases?

Mr. HOOD. I would think so, yes.

Mr. ANDERSON. Then what role do you think the State government should play in these offshore terminals?

Mr. HOOD. Mr. Anderson, I am really not qualified to pass on the jurisdictional questions that are inherent in this legislation, and I would defer to others at this point.

Mr. ANDERSON. Do we have some one else later that could discuss this State role a little bit?

The CHAIRMAN. We will have some one, yes. We have had some, but have not gone into it as deeply as they should.

Mr. ANDERSON. Thank you. I will withhold my questions then.

The CHAIRMAN. Any further questions, Mr. Anderson?

Mr. ANDERSON. No.

The CHAIRMAN. Mr. Breaux?

Mr. BREAUX. Thank you, Madam Chairman.

Thank you, Mr. Hood, for your statement.

Mr. Hood, I would like to discuss briefly two areas mentioned in your statement; the cost factors of the larger VLCC's and the safety factor.

What is your estimate of any cost savings on the per ton cost of oil that might be brought about by using VLCC's rather than using, say, tankers of 40,000 deadweight ton capacity?

Do you have any information pertaining to this?

Mr. HOOD. Again, as a part of the feasibility study done for the Maritime Administration, and as a part of a study done for the State of Delaware, I have a chart here which shows 1985 costs equated to using various sizes of tankers from various types of offshore facilities utilizing various types of feeder systems.

Mr. BREAUX. Would you agree with the figures that would indicate that by using a 47,000 deadweight ton tanker, the cost importing oil would be about $13 a ton?

Mr. HOOD. From the chart, the cost per barrel using a 250,000 deadweight tanker with transshipment from the Bahamas in 30,000 deadweight tankers, is $1.26 per barrel.

Using a 326,000 deadweight tanker and the same system, the price is $1.15 a barrel.

Using a 500,000 deadweight tanker the same system, the price is 97 cents a barrel.

Mr. BREAUX. We have been given figures in the committee that show present oil shipments on a 47,000 deadweight tanker can be imported for approximately $13 a ton, whereas using a 250,000-ton tanker the price would be reduced to approximately $5.15 per ton.

Let me ask you, are those ballpark figures as a shipbuilder, or do you know?

Mr. HOOD. I really would not know. What is the ratio again?

Mr. BREAUX. On a 47,000-ton tanker it would be approximately $13 a ton, whereas on a 250,000 VLCC it would go down to approximately $5.15 per ton.

Mr. HOOD. It could well be, but it does not seem to jibe with the figures in this chart.

Mr. BREAUX. That is why I bring it up, because there is a difference in the figures that have been given.

Regarding the safety factor, do most of the collisions of large ships occur when they are either entering the port or leaving the port?

Mr. HOOD. I wish I had the answer to that at my fingertips, but I do not.

There have been a number of studies in this area, and I believe the U.S. Coast Guard has a wealth of material on the subject.

My feeling would be that most of the collisions that result in spillage would be close to port.

Mr. BREAUX. We had someone else who tstified that approximately 80 percent of the collisions with large tankers and large ships occur when they are either entering or exiting from a port or habor. I would like your opinion on the possibility that a deepwater port facility would greatly lessen the chances of ship collisions. What is your opinion?

Mr. HOOD. That is my opinion, and I believe it is supported by all that I have read on the subject.

Mr. Breaux. Does the shipbuilding industry prefer any particular type of deepwater port, meaning either a monobuoy system or a sea island type system?

Mr. Hood. No, sir, I think this is something for the tanker operators and the oil industry to decide.

Mr. Breaux. Neither one would particularly present any unusual problems to the shipping industry?

Mr. Hood. We are the suppliers of the vessels.

Mr. Breaux. The last question, if I may, Madam Chairman.

In your opinion, is it impractical and infeasible or impossible to enlarge present port facilities and ship channels in order to accommodate the VLCC's?

Mr. Hood. Economically it would seem impractical, yes.

Also, there are environmental constraints which must be taken into account.

Mr. Breaux. In your opinion, are the environmental problems much less with a deepwater port facility than they would be in trying to enlarge existing ship channels and port facilities?

Mr. Hood. Yes, sir.

Mr. Breaux. Thank you, Madam Chairman.

The Chairman. Mr. Cohen, Mr. Hood represents the Shipbuilders Council, and he is here to answer questions about the tankers, the ships, and so forth.

Do you have any questions at this time?

Mr. Cohen. No questions, Madam Chairman.

The Chairman. I think counsel has a question he would like to put to you.

Mr. Heyward. In connection with your statements concerning repair yards, Mr. Hood, and the chairman's question on a timetable, would you not agree in connection with the utilization of offshore facilities, and assuming, as we all apparently do, that there is going to be an increase in oil imports, that the construction of additional refinery capacity, the construction of the offshore port facilities, some construction of larger U.S. tankers and the increased repair capacity, would all flow from a decision of these offshore terminals and that they would all be moving together depending on the needs of the country and the industry, as far as each capacity is concerned?

Mr. Hood. I would agree with you most emphatically on each point, Mr. Heyward.

Mr. Heyward. Thank you.

The Chairman. Mr. Rountree, did you have a question?

Mr. Rountree. No questions.

Mr. Cohen. Let me ask one question.

You indicate on page 3 of your statement that the only place that would actually permit the operation of supertankers would be the Pacific Northwest and Puget Sound. You say the east coast is out.

Mr. Hood. The channel depth is too limited to facilitate the operation of these large vessels fully loaded.

Obviously you can build a VLCC, launch it and deliver it away from the port, without load, but——

Mr. Cohen. Let me interrupt here. The majority of collisions, I assume, come about, as Mr. Breaux has indicated, when either leaving the port or entering the port, and I assume that is because of the traffic.

Mr. Hood. That is right.

Mr. Cohen. Now, if you are simply going to have a reduced load on a large supertanker, that really does not accomplish the objective of reducing traffic or getting more gallonage to the port, does it?

Mr. Hood. It would seem to me that the point you make is an argument for offshore deepwater terminals.

Mr. Cohen. I am not making an argument either way.

What I am trying to determine is whether in your opinion there are any possible or feasible site locations on the east coast. In particular, I am talking about the State of Maine. There have been studies done, some recommendations made.

For example, in the Machias Port area, according to the Corps of Engineers. There also is an application pending now by a major oil company for a refinery in the town of Eastport, with the idea this would also accommodate the supertankers. Considerable opposition being mounted because of the environmental hazards, or I should say potential environmental hazards.

It has been opposed by the Canadian Cabinet on that basis, and I am trying to find out on what statistics you rely.

Mr. Hood. I am looking at tabulation of port and harbor capabilities. At the head of the list is Portland, Maine, and it is shown as having a maximum draft vessel using area, in 1970, of 51 feet. The controlling depth is 45 feet. The average tidal variation is 9 feet, and the approximate maximum dredgable depth is indicated at 60 feet. In other words, you have the possibility of going 9 feet deeper there.

Mr. Cohen. That is the Portland area. What about the—up on the coast of Maine, the Machias Port or the Eastport area?

Mr. Hood. I have no figures, Mr. Cohen, on that.

Mr. Cohen. Where do you derive your figures from?

Mr. Hood. This is from a report entitled "The Feasibility of a North Atlantic Deepwater Oil Terminal", published by the U.S. Department of Commerce, Maritime Administration, in July 1972. It was a study done by Soros Associates, Inc.

Mr. Cohen. Department of Commerce?

Mr. Hood. Yes.

Mr. Cohen. And according to that report, the only location considered, at least in those statistics, would be Portland, Maine?

Mr. Hood. I could not answer definitively to that question, because other Maine locations are not in this table.

Mr. Cohen. According to the report in front of you, the only place that was considered, at least on the face of it, is Portland, Maine?

Mr. Hood. Yes, sir.

Mr. Cohen. Thank you, Madam Chairman.

The Chairman. I would like to just ask one more question, Mr. Hood.

With the devaluation of our dollar, what about the comparative costs today between foreign building and U.S. shipyards?

Mr. Hood. The two devaluations of the dollar and the subsequent monetary revaluations abroad have changed the relative difference in shipbuilding prices here and abroad.

The net effect has been to close the gap. However, it needs to be mentioned, and I believe I cited this point during my last appearance before the committee; there are certain statutory requirements that have recently been imposed upon American shipyards. These concern OSHA requirements, workmen's compensation rates, social security increases, and also environmental requirements. These have increased U.S. selling price by about 6 percent.

The CHAIRMAN. Will not those environmental requirements and so forth, will not many of those apply to ships built foreign?

Mr. HOOD. I am talking here, Madam Chairman, about the requirements that apply to the physical facility of the shipyard.

The CHAIRMAN. On the shipyard?

Mr. HOOD. Yes; other standards influence the cost of ship construction.

The CHAIRMAN. But I mean in building of the ships, the tankers.

Mr. HOOD. This will depend upon the outcome of the October IMCO conference and whether or not international requirements are universal.

The CHAIRMAN. I understand; you are not the one to ask this, but I just foresee this difficulty. Are we going to be able to prohibit ships that do not meet the same requirements that we are making our ships meet, to our ports?

Mr. HOOD. If the intent of the Congress with respect to pollution control and environmental standards is to be carried out, all ships entering U.S. navigable waters whether foreign or domestic, comply with the same standards.

The CHAIRMAN. We are going into some of the hearings this month on the double-bottom requirement, and I think it is terribly important, if we are going to require our ships and tankers to have these standards, we are going to have to do it worldwide, or not let them use the same ports we do in our area.

Mr. HOOD. The Coast Guard yesterday announced they would not impose the tentative proposed standards on American-built and American-designed ships until after October and, as I suggested earlier, hopefully some kind of an international agreement will emerge from the IMCO meeting.

The CHAIRMAN. We could not build a ship and meet the requirements by October, could we?

Mr. HOOD. No.

The CHAIRMAN. Thank you.

Mr. HOOD. Thank you very much.

The CHAIRMAN. Our next witness is Mr. Charles D. Matthews, president, National Ocean Industries Association, Washington, D.C., accompanied by Griff C. Lee, chief engineer, J. Ray McDermott & Co., Inc., New Orleans, La.; and Comdr. Bernard Frankel, U.S. Navy, retired, president, IMODCO International, Inc., Los Angeles, Calif.

Mr. Matthews, when you start with your statement, would you introduce the men who accompany you for the record, and I want to say before you start that I may have to leave and turn it over to our very capable colleague, Mr. Downing, before you are through with your statement.

So, if I have to leave, pardon me.

STATEMENT OF CHARLES D. MATTHEWS, PRESIDENT, NATIONAL OCEAN INDUSTRIES ASSOCIATION, WASHINGTON, D.C.; ACCOMPANIED BY GRIFF C. LEE, CHIEF ENGINEER, J. RAY McDERMOTT CO., NEW ORLEANS, LA.; AND COMDR. BERNARD FRANKEL, U.S. NAVY (RET.), PRESIDENT IMODCO INTERNATIONAL, INC., LOS ANGELES, CALIF.

Mr. MATTHEWS. It is a pleasure for us to see you, Madam Chairman. In fact, as you notice, I begin, in my printed statement by saying, "Mr. Chairman," Because I thought you would not be with us today. Please forgive me.

The CHAIRMAN. As long as you don't call me "Ms.".

Mr. MATTHEWS. Madam Chairman and members of the committee, my name is Charles D. Matthews, I am president of the National Ocean Industries Association, a Washington-based trade association organized to serve as the legislative and administrative spokesman of the offshore and ocean-oriented industries at the Federal level.

Accompanying me today and also speaking on behalf of the National Ocean Industries Association are two representatives of member companies who have extensive experience in the actual engineering, design, and construction of the type facilities the committee is concerned with in these hearings.

Mr. Griff C. Lee is the chief engineer for J. Ray McDermott & Co. of New Orleans, which is one of the world's foremost engineering and construction firms engaged in offshore activities.

Also with me is Mr. Bernard Frankel, president of IMODCO International, Inc., of Los Angeles.

The installation of the first IMODCO offshore single buoy mooring system in 1958, can be considered as the beginning of the offshore terminal business—such as we are discussing here today.

If it meets the pleasure of the committee, we propose to present our testimony in the following manner.

After a brief introductory statement by me, Mr. Lee will discuss the construction of the pumping platform and related facilities including the pipelining to shore. Mr. Frankel will then discuss the actual single buoy mooring system.

We will then be available for questions from the committee, if you so desire.

Mr. Lee and Mr. Frankel, I might say, in the interest of time, will merely submit their statements for the record, and summarize them.

The CHAIRMAN. That will be acceptable.

Mr. MATTHEWS. The membership of NOIA is made up particularly of (1) air and marine transport companies, (2) drilling contractors, (3) equipment suppliers, (4) gas transmission companies, (5) geographical contractors, (6) offshore construction companies, (7) petroleum producers, (8) service companies, (9) shipyards, and (10) others.

The two categories—service and others—include the multitude of small businesses sometimes overlooked or disregarded whenever national policy or other decisions are made, but who have an active interest in legislation of this nature because it can have an effect on their economic wellbeing.

These categories include such activities as divers, consultants, insurance agents, journalists, lawyers, commercial diving schools, lubrication specialists, painters, data specialists, oceanographic instrumentation experts, to name a few. We have member companies or individuals in 19 States—from Alaska, down the west coast, around the Gulf of Mexico, up the Atlantic coast, and across the midcontinent area.

As one may readily see many of NOIA's members have a sincere interest in the proposals to construct, operate, and maintain offshore port and terminal facilities beyond the territorial waters of the United States, since this activity will mean jobs, sales, or income. We sincerely appreciate the opportunity to discuss the pending legislation with you.

Recently the committee has heard extensive testimony from a variety of witnesses including government, industry, and environmentalists. So far as possible, it is our intention not to duplicate or repeat what has already been said in an effort to conserve the committee's time.

For example, we have read the statements presented by the representatives of Seadock and Loop relative to the energy situation and the need for construction of these facilities.

Since most of the member companies of Seadock and Loop are either producing or pipeline members of the National Ocean Industries Association, it is sufficient for us to say merely that NOIA strongly endorses and supports the important and informative testimony of those two groups.

Madam Chairman and members of the committee, despite the relatively recent consideration of this proposal to construct deepwater terminals off U.S. shores, when one gets down to basic fundamentals, it should be recognized that there is really very little difference between the construction, operation, and maintenance of such deepwater unloading terminals and some of the activities which have been going on in the Gulf of Mexico for a good many years.

Facilities are being constructed and operated to take crude oil, whether it be from deep in the earth below the gulf or from a very large crude carrier, to a production or pumping platform, and from there by pipeline to an onshore facility, whether it be a tank farm or a refinery.

It should be further recognized that an unloading facility like those proposed for licensing in this legislation is no different from a loading facility from the point of view of construction and engineering.

American companies, such as these represented with me here today, have extensive experience in building and operating loading facilities in many areas of the world, at various depths of water, and in a variety of different sea States.

There are even two major problems which may sometimes be associated with a loading terminal which would not be associated with unloading terminals. These problems relate to ballast disposal and the possible overfilling of ships during the loading operations.

As an indication of the seriousness the Congress assigns to the construction of deepwater terminals to help alleviate the energy situation, three committees in the House of Representatives are currently considering legislation to regulate and license construction of these facilities. Your distinguished Committee on Merchant Marine and Fisheries presently has these hearings under way relative to H.R. 5091, to amend the Marine Protection, Research, and Sanctuaries Act of 1972, and H.R. 5898, to amend the Merchant Marine Act of 1936.

In addition, the Interior and Insular Affairs Committee has held preliminary hearings and will continue later this month on H.R. 7501, the administration's suggested bill to amend the Outer Continental Shelf Lands Act of August 7. 1953. and the Public Works Committee has also held hearings on H.R. 2020. which would give each State statutory veto power over construction of deepwater terminals in international waters off its coast.

On the Senate side, the issue of construction of deepwater terminals is being considered in a somewhat different fashion by a joint hearing of the Committees on Public Works, Commerce, and Interior and Insular Affairs.

The National Ocean Industries Association is opposed to the concept suggested by H.R. 2020 in the House of Public Works Committee. It seems to us that a more reasonable legislative approach to solving some of the problems facing us relative to construction of offshore terminals would be found in the bills pending either before the House Interior and Insular Affairs Committee or this distinguished committee.

We believe there is a need for enactment of Federal legislation to allow construction, operation, and maintenance of deepwater terminals on the Outer Continental Shelf. We believe that the U.S. Government does have jurisdiction to act in this area in the same manner as it has acted previously in the enactment of the Outer Continental Shelf Lands Act.

The Congress, in approving that Act, but not anticipating the need for deepwater terminals in 1953, provided for the Constitution and laws and civil and political jurisdictions of the United States to be extended to all artificial islands and fixed structures which may be erected upon the OCS for the purpose of exploring for, developing, removing, and transporting resources from only the subsoil and seabed of that OCS area.

If Congress. in 1953. had had the gift of future vision so that it could have anticipated the current situation, perhaps the OCS Lands Act language would have been expanded to include the erection of artificial islands and fixed structures for the purpose of unloading very large crude carriers in deepwaters.

Since the existing Federal statutes do not seem to us to include provision for the licensing and regulation of the construction and operation of deepwater unloading facilities, we believe the Congress should exercise jurisdiction in this area by enactment of a law authorizing the Federal issuance of the necessary permits under comprehensive statutory and regulatory provisions specifically governing such offshore facilities.

As was pointed out a moment ago, from an engineering and construction point of view, these proposed facilities are very similar to those existing in the Gulf of Mexico for extracting crude from the OCS subsoil and seabed.

The Secretary of the Interior has statutory authority to regulate and license platforms and fixed structures in that area.

The U.S. Geological Survey has the responsibility for implementing this law in the name of the Secretary and over the years has developed a set of comprehensive OCA orders and regulations regulating oil, gas, and sulphur leases.

These OCS orders include regulation of such diverse activities as marking of platforms and fixed structures; pollution and waste disposal; approval procedures for installation and operation of platforms, fixed and mobile structures, and artificial islands; approval of procedures for oil and gas pipelines; and public inspection of records.

The OCS Lands Act also provides for the Coast Guard to have authority to promulgate and enforce regulations with respect to lights and warning devices, safety equipment, and other matters relating to the promotion of safety of life and property on artificial structures or in the waters adjacent thereto.

Furthermore, the U.S. Army Corps of Engineers' authority to prevent obstructions to navigation in the navigable waters of the United States is extended to OCS artificial islands and fixed structures.

In addition, the provisions of the Longshoremen's and Harbor Workers' Compensation Act and National Labor Relations Act are extended to employees on these fixed structures.

All these points are noted to indicate that a substantial body of Federal laws and regulations have already been codified to cover the construction of similar facilities in deepwater of the OCS.

It would seem more reasonable to us to extend the existing licensing and regulatory authority of Federal agencies already experienced in the activities relative to these slightly different kinds of offshore facilities, rather than providing for an entirely new agency to get into the act, so to speak.

Both H.R. 5091 and H.R. 5898 provide for this new agency to be the Department of Commerce rather than the Department of the Interior.

For this reason, we would oppose enactment of H.R. 5091 and H.R. 5898 in their present form. H.R. 5898 might be acceptable if the licensing authority were changed from Commerce to Interior; but, even then, the language may be more conducive to judicial misinterpretation because of its more general nature.

The general approach taken by H.R. 7501, which is presently being considered by the House Interior and Insular Affairs Committee, is more nearly in line with what we feel would be a reasonable approach to avoiding duplication of existing effort relative to offshore facilities.

However, we do not consider H.R. 7501 to be a panacea by any manner of means.

It has many faults and shortcomings which must be reconciled before it becomes the law of the land.

But it is designed to cover in a single law authority for one Federal agency to issue a license for the construction and operation of a deepwater terminal which, at the same time, giving it adequate safeguards and consideration to various effects the facility may have upon the environment, the national interest, and jurisdiction of the State and Federal Governments.

Madam Chairman and members of this distinguished committee, even though the National Ocean Industries Association must oppose the legislative proposals presently pending before you, we want to express our sincere belief that your efforts and these hearings will contribute significantly to the possible resolution of this serious current problem.

By having your committee approach these issues from a different point of view, such as making the Department of Commerce the regulating and licensing agency, the issues have been more clearly drawn and the possible solutions have emerged which would not unduly interfere or duplicate existing structures of government.

Perhaps on the basis of the outstanding hearing record developed by this committee, it would not be inappropriate for the members and staff of the Merchant Marine and Fisheries Committee to discuss with their counterparts and colleagues on the House Interior and Insular Affairs Committee ways and means of expediting favorable consideration of whatever legislation is necessary to solve these problems in the National interest.

With this general introductory statement, I will conclude my part of the testimony and introduce to the distinguished members of the committee Mr. Griff C. Lee, chief engineer of the J. Ray McDermott & Co. of New Orleans, who will then be followed by Mr. Bernard Frankel, president of IMODCO. International of Los Angeles.

The CHAIRMAN. I am going to have to leave now. I did have some questions to ask, which I will defer. But I would like to get this one question to you.

We are going to have some difficulties unless the Law of the Sea Conference and other international organizations are successfully concluded at an early date.

Are there any deepsea ports built right now out in the open waters?

Mr. MATTHEWS. In United States waters?

The CHAIRMAN. No, in the open sea. I know some countries now are claiming 200 miles, others claim the 12-mile limit, and so forth, but is there any difficulty today with the ports that are built, if there are any built out into the open waters; are there any difficulties with the various countries?

Mr. MATTHEWS. Both of my colleagues are shaking their heads that yes, there are terminals built in international waters.

Do you know of any problems we are having with international law?

Mr. FRANKEL. Well, in Indonesian waters, for example, there are several terminals that are anywhere from 65 to 100 miles offshore.

We have installed other facilities which are as far offshore as 16 to 20 miles.

The difficulties as of this date we have not observed in the administration of the facilities, or in the operating of them.

The Chairman. It seems like some of the testimony that has been brought before us is that until we come up with some sort of a law that is going to protect these ports and would have to be our law first, and then it would have to be an international agreement, that many of these people who are interested in building the deep sea ports are hesitant to go ahead without some kind of a general agreement. Am I wrong in this conclusion?

Mr. Matthews. I think that would really be left up to the Seadock and Loop, we will say. They are the ones who are moving forward more rapidly, and they are talking about waters that are sufficiently far out to be considered international waters.

Madam Chairman, I do not know that I can answer for them. I think the Seadock and the LOOP people would. I think their willingness to move ahead rapidly has been expressed to this committee. Despite the fact the Law of the Sea Conference has not yet met, this does not seem to be deterring them. I think they will move forward.

The Chairman. If I recall correctly, and I will ask counsel, I believe they expressed concern until we pass some sort of legislation, did they not?

Mr. Heyward. Yes.

Mr. Matthews. This is true. I am not saying it is an area without concern.

The Chairman. I am sure that we are going to be able to come up with some sore of a bill that will prevent duplication of efforts by various Government agencies. At least that is our hope.

We cannot be certain of what is going to happen with the other countries, and whether we can expect general international concurrence with our initiative. That we do not know.

Mr. Matthews. The Federal Government is asking for nominations for acreage for leasing in the OCS waters in the Gulf of Mexico out to the 600 meter isobath. This would entail some of the same problems. Whether we are taking the crude from under the seabed or off a tanker, we have the same problem. The Government has indicated in the request for bids on these tracts that there may have to be certain stipulations in the leasing in anticipation of this Law of the Sea Conference. So, yes, we are aware of the problem, but I do not have a ready answer for you.

The Chairman. Thank you, Mr. Matthews and Mr. Frankel and Mr. Lee.

I will now turn the Chair over to Mr. Downing.

Mr. Matthews. I will turn it over to Mr. Lee, for him to summarize his statement.

Mr. Downing [presiding]. All right, sir, you may proceed.

Mr. Lee. Mr. Chairman and members of the committee, I have prepared a statement for the record, but it is rather long, and contains some duplications, and therefore I think it might be better if I were to summarize, or read excerpts of this, to save the time of the committee.

We will be glad to go into it at any depth you wish.

Mr. Downing. Without objection your complete statement will be made a part of the record at this point, and you may proceed.

[The full prepared statement of Griff C. Lee follows:]

STATEMENT BY GRIFF C. LEE, CHIEF ENGINEER, J. RAY MCDERMOTT & CO., INC.

My name is Griff C. Lee, Chief Engineer of J. Ray McDermott & Co., Inc., appearing on behalf of National Ocean Industries Association. I would like to thank the members on the Committee of Merchant Marine and Fisheries for the opportunity of making this presentation to you.

J. Ray McDermott & Co., Inc. is an engineering and contracting firm specializing in the design, fabrication and construction of offshore drilling, production and loading facilities and submarine pipelines for the marine petroleum industry. We are a U. S. Corporation with principal offices in New Orleans, Louisiana, and operate worldwide through subsidiary corporations in almost all areas where marine or offshore oil operations are underway.

The purpose of this presentation will be to discuss and describe the offshore portion of the terminal from an engineering and construction standpoint. It is not the intention to attempt to justify or comment on the needs of this type terminal or to discuss the economic effect of these terminals on the price of petroleum products.

From an engineering and construction standpoint, deep draft tanker unloading terminals are entirely feasible and practical. Actually, offshore terminals are in use at numerous locations throughout the world. Most of these existing facilities, however, are located adjacent to the oil producing area and are used to load the tanker for shipping. The facilities being considered for U.S.A. would be similar except that they would be used for unloading rather than loading. This may cause some relocation of components but would not change the feasibility or concept. At its current state of development, the present-day offshore terminal is a simple, rugged facility. When properly designed and constructed, they have performed quite satisfactorily. Many of the offshore loading facilities now in use throughout the world have been designed and constructed entirely or in part by J. Ray McDermott & Co., Inc. We now have under construction for offshore Saudi Arabia, a terminal approximately as large as the more ambitious proposals now being discussed for the U.S.A.

DEVELOPMENT

Throughout the history of the marine industry it has been proven that it is generally more efficient to load or unload any type of oceangoing vessel while the vessel is tied up to a pier or dock in a calm protected harbor. Frequently, the "calm protected harbor" with sufficient depth to accommodate today's larger tankers is simply not available; therefore, it has been necessary to devise other means to load and unload tankers.

The first type facility developed to load or unload tankers offshore was a spread mooring. In this system, the vessel is moored in position to buoys which are attached to fixed anchors while the product is unloaded through a hose picked up from bottom. Where site conditions are favorable, this has proven satisfactory. However, the time required to connect and disconnect is generally long, especially retrieving the hose from the ocean bottom. In locations where severe wind, wave and current occurs from any direction, this system has not proven satisfactory due to the large environmental forces on the vessel secured in a fixed position. At a few locations an offshore fixed pier type dock or "man-made" island has been constructed. These provide the convenience of being able to moor the vessel directly to the dock and to unload the oil through loading arms rather than a hose system. These have been satisfactory where only moderate seas are expected. However, for operations off the U. S. Coast, they would be impractical without protection from a breakwater, which would be prohibitive from a cost standpoint. These difficulties of both the spread mooring and the fixed dock have led to the development of the single point mooring buoy system.

Single point mooring buoys are used to hold the tanker while loading or unloading cargo through the buoy itself, utilizing a hose system. A ship moored to a single point mooring buoy system is free to swivel or weather vane around a central point. The first single point mooring system to accommoderate tankers was introduced in 1958. However, there had been earlier usage of a similar concept to moor barges for oil production. These early efforts were rather crude and did not include the refinement and sophistication present in today's technology; however, they proved to be adequate and have served as the beginning of today's industry. Through continued improvement, they have been developed into a very safe and satisfactory means of handling liquid cargo.

Approximately 21 single point mooring buoy systems were installed from 1959 through 1965. Of these early buoys, approximately 14 are still in service. From 1965 through the present, over 90 single point mooring buoy systems have been installed, and most of them are still in service. There are roughly 20 more on order and under construction.

As illustrated in Figure 1, an Offshore Tanker Terminal consists of a single point buoy mooring, a pumping station on an offshore platform, and a submarine pipeline to shore. When a tanker approaches the berth, the mooring line is picked up and connected to the tanker, usually with the aid of a launch. The floating hose is brought alongside the tanker, lifted to deck and connected to the tanker manifold. The pumps on the tanker pump the oil through the floating hose, buoy and underbuoy hose, into the pipeline to the pumping station. Here, the oil is metered, then pumped to shore with the large booster pumps on the pumping station. Included in the pumping station are the usual support facilities such as quarters, utilities, controls and communications. The pumping station is generally installed reasonably close to the buoy to minimize the distance pumped by the ship's equipment.

The selection of the most desirable location is a careful optimization of many factors. Probably the most consideration would be the influence of an offshore tanker terminal on the area in general. However, this is beyond the scope of this discussion. From an economic and construction standpoint, probably the most important factor is the accessibility to an existing pipeline network which is capable of carrying the product to refineries. Obviously, the conditions which exist at the site are also of prime importance. In addition to the frequency of occurrence of bad weather, other site conditions also affect the construction, such as a good foundation for platform and buoy anchoring and a desirable bottom for pipeline along the right-of-way.

The size facilities depends on the desired capacity and flow rate as well as distance from shore. The terminal illustrated in Figure 1 shows the basic concept of a system utilizing only one buoy and pipeline. However, multiples at any of the components are possible to increase capacity or improve flexibility.

SINGLE POINT MOORING

As illustrated in Figure 2, the Conventional Single Point Mooring Buoy System consists of a cylindrical buoy moored by 4 to 8 chains which are anchored to the sea bottom. Several other types of single point mooring buoy systems have been developed, although the conventional type accounts for well over 90% of the installations to date. Figures 4 and 5 show photographs of actual single point mooring systems in operation. This type of system has been installed in most parts of the world and has been reported to operate satisfactorily in seas averaging 12 feet, with water depths exceeding 200 feet. The buoy system can be designed to safely hold the moored vessels in much larger seas and to survive (without the tanker) under extreme storm conditions. The limiting factor has not been the strength of the system but the operational phase; that is, the maximum environmental conditions in which the tankers and service launches can safely perform such tasks as handling hoses and mooring lines.

For discussion purposes, the single point mooring buoy system can be broken down into the components: buoy hull, hose system, and mooring and anchoring system. The buoy hull acts not only as a transfer system for petroleum products but also as a load carrying element. The ship is connected to the buoy by mooring lines. The resultant loads, which are caused by a combination of wind, wave and current, are transmitted from the ship through the mooring lines to the buoy and, eventually, into the anchoring system.

The conventional buoy hull is approximately 40 feet in diameter, 15 feet deep and weighs in the vicinity of 250 tons. The center section of the buoy hull usually contains the fixed part of the swivel and its piping, which connects to the underbuoy hose. On the top of the hull there is a rotating deck mounted on a large bearing. The overboard piping on the rotating deck connects to the movable part of the swivel at one end and the floating hose to the ship at the other end. The rotating deck also includes a "mooring arm" which is used to connect the mooring lines to the ship. The outer part of the hull is usually divided into separate compartments which may be filled with foam for positive flotation.

The floating hose system is used to transfer petroleum products between the offloading vessel and the buoy. The hose construction varies (dependent on the manufacturer) but are generally made up of many plies of fabric, wire and rubber which, in turn, is wrapped with high tensile steel body wire and imbedded in synthetic rubber. Buoyancy is provided by either floating collars or by flotation material built into the cover. To give an illustration, for a system designed for a rate of 100,000 barrels per hour at normal operating pressures, the inside diameter of the hose would be 24″ and the outside diameter 44″. A 35 ft. long section of this hose would weigh almost 4 tons and an overall length of 1,000 ft. would be required for a 250,000 DWT tanker. The underbuoy hose system is used to transfer petroleum products between the buoy and the pipeline. One end of the underbuoy line system is connected to a rigid pipeline end manifold and the other end connected to the buoy. To keep the hose in the desired position or configuration on site, adjustable floating collars are used to properly vary the buoyancy.

The mooring system is used to moor the tanker to the buoy to hold it in position during loading or unloading. The system is made up of nylon or synthetic line usually with chain and shackles at the ends to reduce wear from chafing. The line itself must remain floating when not in use and therefore is either the self-floating type or a combination of non-floating line and floats. The line itself is usually picked up by the support launch and transferred to the ship's bow fairleads. The anchoring system is used to hold the buoy on station under varying occupied and unoccupied conditions. The system is usually made up of stud link anchor chain connected to the buoy at one end and by an anchor pile at the other end. The anchor system is designed not only to withstand the predicted maximum mooring load in the occupied condition but also for the maximum loads on the chains during unoccupied or survival conditions. Since proper tension in all anchor chains is necessary for satisfactory operations, means to verify and adjust chain tension is built into the buoy.

PUMPING STATION

Any offshore facility, such as the pumping station, would be individually designed for the operational requirements and for the environmental conditions at the site. However, for purposes of this discussion, a typical pumping station is illustrated in Figure 3 which shows a 3-platform complex consisting of a manifold platform, a pumping platform, and a quarters and utility platform. Naturally, all of these facilities could be included on one structure or two, with the optimum arrangement developed in the final design phase. The Typical Offshore Installation in Figure 6 shows a 26,000 h.p. gas compression complex which would be similar to a pumping station except designed for natural gas rather than crude oil.

The oil from the tanker would first enter the system through the pipeline riser on the manifold platform. This platform will include such facilities as the major piping, manifolds, metering facilities, and possibly a surge tank. To verify the amount of oil delivered, it would be first metered and would then flow directly to the main booster pumps on the pumping platform. Due to the difficulties in operating the large booster pumps at uneven flow rates, the system would also have the capability of flowing the oil from the tanker into the surge tank, allowing the platform pumps to pump from the surge tank to shore at a more uniform rate of flow. The surge tank also acts as a safety measure since oil can be diverted into the tank while the system is being shut down due to a malfunction. From the manifold platform the oil will flow across a connecting bridge to a pumping platform. This structure will support large capacity turbine driven pumps with adequate power to deliver the product to the terminal on shore. As an example, if the shore terminal is approximately 20 miles from the pumping station and a 48″ O.D. pipeline is used for a rate of 100,000 barrels per hour, approximately 18,000 h.p. would be required in addition to the reserve for standby purposes. The turbine driving the pumps would probably use the crude oil as fuel. However, if the facility were located in an area where natural gas were available, an economic study considering alternate fuel would be made.

Whether all of the piping and pumping facilities were included on one or more structures, the quarters and utility platform would be a separate structure, remote from the main facilities for purposes of safety. This structure would support the operational controls and communications system, quarters and heliport. In addition, the utilities and life support system such as power generation, water supply and sewerage disposal would be included on this structure.

The piping and equipment used on offshore platforms is similar to that used on land installations except the arrangement is usually more compact to conserve space. Offshore piping and equipment is designed in accordance with the latest Codes governing petroleum production and refining operations, such as A.P.I., A.N.S.I. and A.S.M.E.

All of the platforms would be conventional steel offshore structures of the type developed by the petroleum industry for use in the Gulf of Mexico. The first platform of this type was installed in 1947. Since that time they have been updated and improved until there are several thousand similar structures in use throughout the world at the present time. Many of these are small structures; however, at least several hundred are comparable in size to that required for the pumping station of an offshore tanker terminal.

The offshore structure consists of three main components—the jacket, deck and piling. The lower unit or jacket rests on the ocean floor and extends above the water surface. The piling is driven through the legs of the jacket, which serves as a pile driving guide during installation and as a structural unit to resist horizontal loads from wind, wave and current. For larger jackets, as required for an installation of this type, the jacket is fabricated in one unit on land, carried to location on a deck cargo barge and launched into the water. Using a floating crane or "Derrick Barge", it is then rotated into the vertical position, lowered on bottom and the piling driven through the legs. The superstructure consists of several units or "deck sections" built in the fabrication yard, carried to location and set in place. This method of construction has been developed to best utilize the capabilities of offshore construction equipment and to minimize erection time at the location.

The platforms would be designed to support the operational loads and to resist the horizontal loads from the environmental conditions at the site, such as wind, wave and current. Well-established design procedures and guidelines are available such as the American Petroleum Institute RP 2A, "Recommended Practice for Planning, Designing, and Constructing Fixed Offshore Platforms". When the offshore industry first began constructing platforms (approximately 25 years ago), very little information was available for either the environmental conditions or the design of the platform itself. Through the many advances which have been developed by the rapidly growing industry, the offshore platform is now another accepted, safe and conventional structure. Platforms have been installed in water depths of 372 feet and are under construction at the present time for water depths up to almost 500 feet.

PIPELINES

The pipeline system will include two separate lines—one from the buoy to the pumping station, the other from the pumping station to shore. In addition, it will include an end manifold at the buoy end of the pipeline and two risers on the platform. The pumping rate and distance to shore will determine the size and pressure requirements of the line. However, even for the single system terminal, which is illustrated with only one buoy, a large line will be required. As an example, for a flow rate of 100,000 barrels per hour, a pipeline in the range of 48″ O.D. will be necessary. Laying a pipeline on the ocean floor is certainly not a new or unusual operation. Thousands of miles of marine pipeline have been installed and are in use at the present time, including lines of the size and water depth that would be required for an offshore terminal.

Marine pipelines are usually installed using what the construction industry terms a "Lay Barge" which includes all of the facilities required to weld, apply protective coating to the joints and to support the pipe until it is laid on the ocean floor. To obtain rapid production, "assembly line" techniques are used so that welding takes places in a number of progressive stations. When a weld is completed and coated, the barge is moved forward lowering another joint to bottom and a new joint of pipe is added to the first station. The pipe is too heavy and too stiff to reach bottom unsupported in water depths suitable for offshore terminals. Therefore, a buoyant supporting system or slide called a "Stinger" is used to provide support until the pipe is resting on the ocean bottom.

Depending upon the site conditions, type of material on the ocean floor, bottom currents, etc., the pipeline will be laid directly on the ocean bottom or will be buried as required for safety. In shallower water, as the pipeline approaches the beach it will be buried for complete protection. Prior to installation, the pipe is wrapped with a corrosion resistant coating and encased in concrete for added weight and mechanical protection. After installation, corrosion of the line is prevented by cathodic protection. The assembly process utilizes the best techniques of welding available and is completely X-rayed and the joints coated with corrosion resistant coating prior to leaving the barge. After the line is completed, it is pressure tested and "pigged" to make sure that it is entirely satisfactory.

CONCLUSION

Locating a tanker terminal offshore, away from the more congested existing docks, has a number of inherent advantages. One of the most important is the reduced traffic problems. Locating the terminal offshore allows use of the largest tankers available. This minimizes the number of ships required, thereby reducing the chance of accidents. Offshore terminals have had a very good safety record. As far as we know there have been no major spills resulting from loading or unloading operations from an offshore terminal.

From an engineering and construction standpoint, an offshore tanker terminal is entirely feasible and presents no hazards or undue difficulties. To be able to unload tankers at the rapid rate required for economical operation, a large and expensive facility will be required. Construction of this facility would certainly be a major engineering effort. However, the existing U. S. construction industry has the capability to design and construct an entirely adequate facility.

From an operational standpoint, an offshore tanker terminal is also entirely feasible. Built into the system would be both manual and automatic controls and safeguards to prevent accidents and to minimize problems should malfunctions occur. Offshore tanker terminals have been safely operated in remote areas throughout the world. Certainly, it would be possible to operate a similar system in the U. S. continental area where more is known concerning the operating conditions. Naturally, there will be periods of bad weather at any location where offshore operations cannot take place. In this event, a tanker approaching the berth will be unable to moor or a tanker already at berth, unloading, will have to terminate operations and move out of position until more favorable weather returns. The offshore petroleum industry has certainly developed the capability required to safely plan, construct and operate a facility of this type.

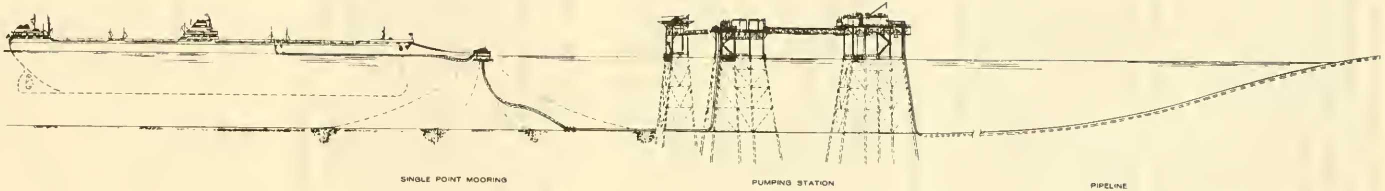

Fig. 1

OFFSHORE TANKER TERMINAL

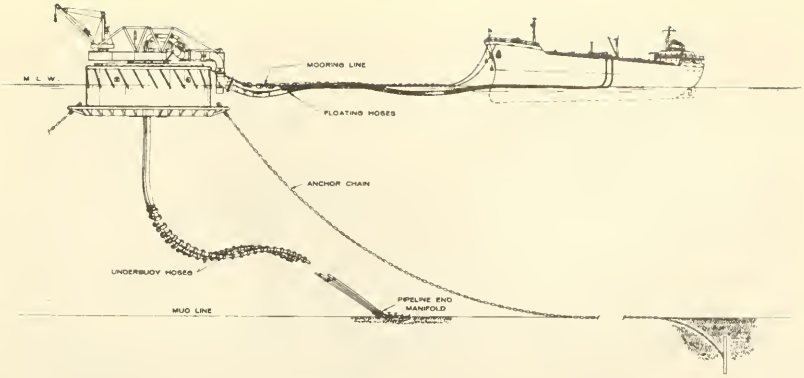

Fig. 2

SINGLE POINT MOORING BUOY SYSTEM

Mr. LEE. For those of you who are not familiar with my firm, J. Ray McDermott & Co. is an engineering and contracting firm specializing in the design, fabrication, and construction of offshore drilling, production and loading facilities and submarine pipelines for the marine petroleum industry.

We work throughout the world. The purpose of this presentation is to discuss and describe the offshore portion of the terminal from an engineering and construction standpoint.

It is not the intent to justify or comment on the needs of this type of terminal, or to discuss the economic effect of these terminals on the price of petroleum products. That is not in our area of operation.

In our opinion, offshore or deep draft terminals or whichever name is used—unfortunately many have been applied to similar facilities—are entirely feasible. Actually, we have built a number of similar facilities throughout the world, not in U.S. waters.

Most of these existing facilities have been in the producing area to load tankers.

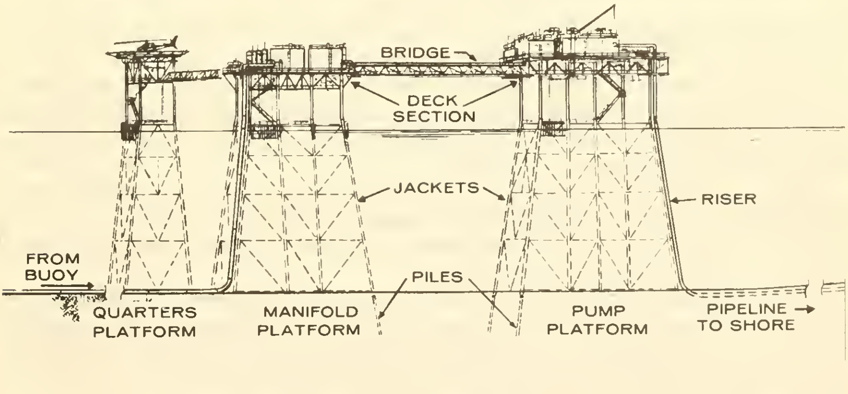

Fig. 3

OFFSHORE PUMPING STATION

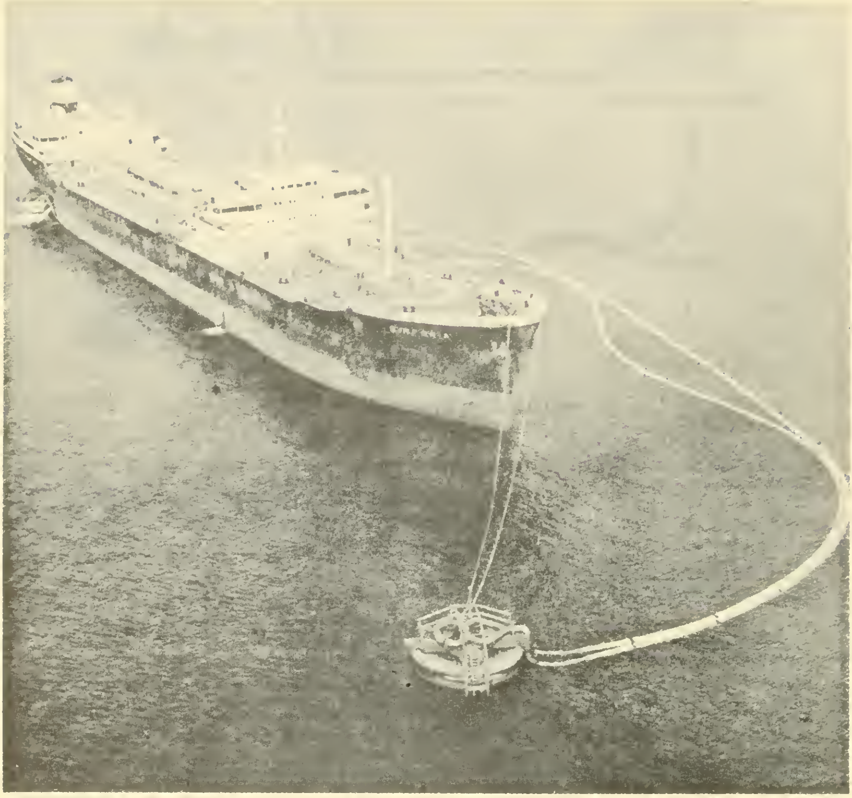

Fig. 4

SINGLE POINT MOORING BUOY SYSTEM IN OPERATION

In the previous statement the question was asked where were these offshore facilities located.

We have built a large number in the Persian Gulf, West Coast of Africa, some in Southeast Asia. that actually provide the same type facility, but in most of these the oil is loaded into the tanker, rather than unloading from the tanker.

That might rearrange a few of the components, but from the actual standpoint of feasibility it makes a little difference.

In the current state of development these offshore terminals are simple, rugged, and operate safely.

We now have under construction for the Persian-Arabian Gulf off Saudi Arabia, a facility approximately as large as the initial plans of either LOOP or Seadock. The offshore terminals have been used for a number of years. They first began with an attempt to load tankers where no other facilities were available.

The first attempt was the familiar fixed, or spread mooring or seaberth.

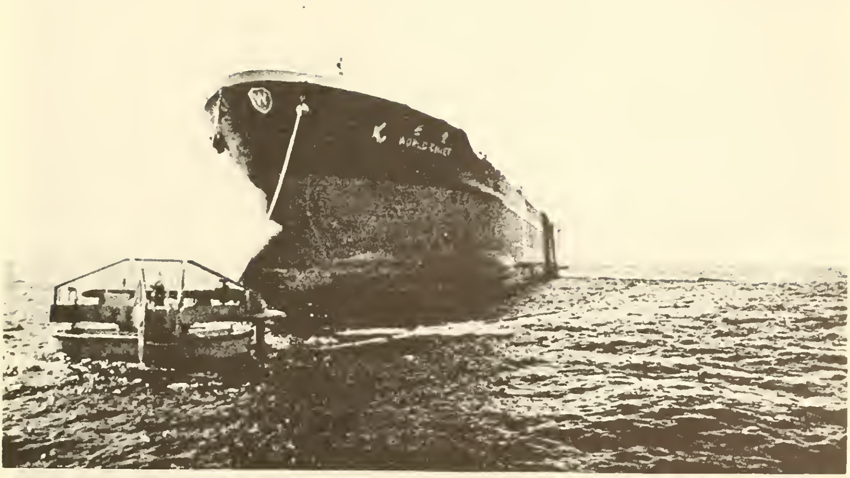

Fig. 5

SINGLE POINT MOORING BUOY SYSTEM IN OPERATION

This type of facility holds the vessel in a fixed position to a number of fixed mooring buoys. The hose is picked up from the ocean bottom, and loading takes place.

This has not proven very satisfactory. It is slow to operate. The hose must be picked up from the bottom, and the vessel is held in a fixed position.

At a few locations we have constructed manmade sea islands or docks without a breakwater system.

Here again, these are satisfactory for moderate conditions when the wave and wind occur from one direction.

However, for more severe conditions, or from waves that are not properly oriented with the dock, they have not been very satisfactory.

This led to the development of the single point mooring which had the capability of the tankers swiveling while loading or unloading to properly orient itself with the most difficult prevailing conditions.

I would like, if it is the committee's wish, to refer to the figures on my statement, because that was preferable instead of trying to have slides or charts.

Figure 1 is intended to represent a typical offshore terminal consisting of a single point buoy mooring, a pumping station on an offshore platform, and a submarine pipeline to shore.

When a tanker approaches the berth, the mooring line is picked up and connected to the tanker, usually with the aid of a launch.

The floating hose is brought alongside the tanker, lifted to deck and connected to the tanker manifold.

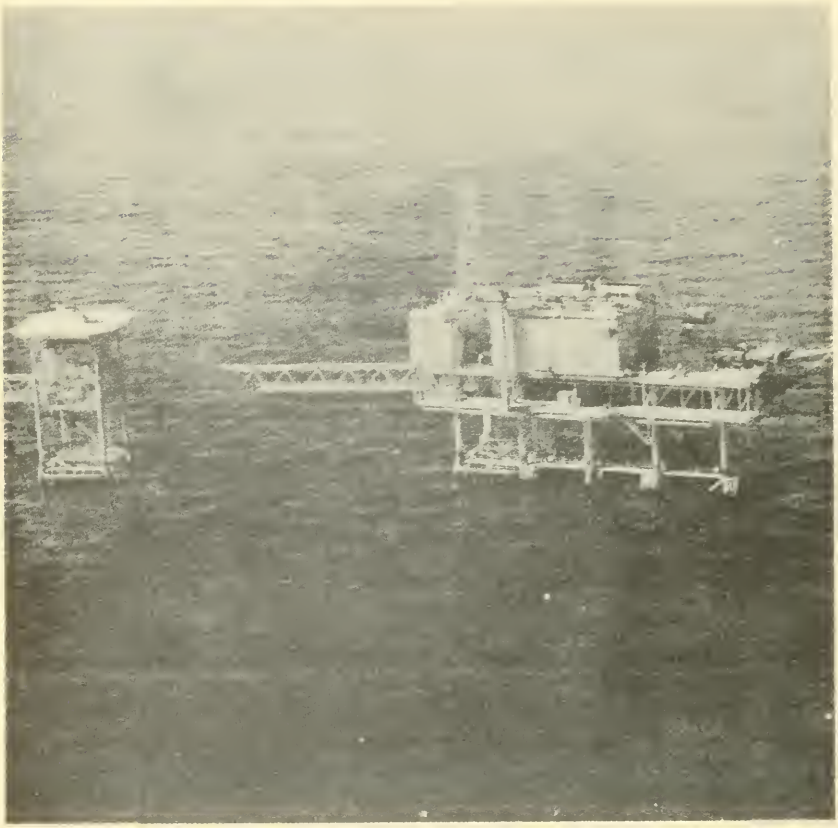

Fig. 6

TYPICAL OFFSHORE PLATFORM

The pumps on the tanker pump the oil through the floating hose, buoy, and underbuoy hose, into the pipeline to the pumping station.

Here the oil is metered, then pumped to shore with the large booster pumps on the pumping station.

In addition to the pumping facilities it is necessary to have utilities, control, communication, et cetera.

The picture is somewhat in error, in order to get that all on one page, the buoy is shown much too close to the platform. I am afraid the artist was in a hurry.

The pumping station is generally installed reasonably close to the buoy to minimize the distance pumped by the ship's equipment.

Figure 2 is typical of the buoys that have been used. There are other types that have been promoted, although approximately 90 percent of the buoys installed are of the configuration shown.

Mr. Frankel will discuss the buoys. Buoys have been operating satisfactorily all over the world. It has been reported that they have had no problem in the 12-foot seas in water depths exceeding 200 feet.

The buoy can be designed to safely hold the vessels considerably under more severe conditions, and the system can be designed to survive without the tanker in very severe conditions, such as the hurricane waves.

The limiting factor is not the strength of the system, but the operational phase, that is the maximum environmental conditions in which the tanker and service launches can safely perform such tasks as handling hoses and mooring lines.

An offshore facility such as a pumping station would actually be very carefully designed, and optimized for the requirements for the site.

For purposes of illustration, if you would move to Figure 3, which shows a typical offshore complex with three structures. Actually, it would have been provided on one or two platforms, depending upon the need of the location.

The oil from the tanker would first enter the platform complex through the vertical pipeline or the riser on the first structure.

This platform would include facilities as major piping, manifolds, metering.

The oil would generally be metered as soon as possible to verify the delivery being made by the tanker.

From the manifold platform the oil would flow across a connecting bridge to a pumping platform where large pumps would be housed.

As an example, naturally, the pumping requirements would depend on the rate and distance to shore, but for a typical unloading rate of 100,000 barrels per hour, if the shore terminal were located 20 miles from the pumping station, 18,000 horsepower will be required for a 48-inch pipeline.

Whether all the piping or pumping facilities are on one or two platforms, you would anticipate that the control structure would be a separate platform for safety. This would include such items as living quarters, heliport, utilities, power generation, water supply, sewage, and a poolroom, and television for the crew to watch during off hours.

The piping and equipment on our offshore platform is actually similar in operation to land installations, except it is put in a more compact area to conserve space. These would be designed and installed by the latest codes governing petroleum production and refining, such as API, and ASME.

The platform proper would be conventional steel offshore structures of the type developed by the petroleum industry for the Gulf of Mexico.

The first platform was installed in 1947. Since that time they have been updated, improved, until there are several thousand similar structures in use throughout the world.

Many of these are small structures, but at least several hundred of the existing structures are of similar size to that required for this facility.

An offshore structure consists of three main components, the jacket or foundation unit, which rests on the ocean floor and extends above the water surface.

This jacket is fabricated in one large section, carried to location on a cargo barge, and launched at the location by a similar procedure to a ship being launched in a shipyard.

The jacket will float horizontally in the water. It is rotated to the vertical position by floating crane and control flooding, set on the bottom.

The cover plates are removed and the piling driven through the legs of the jacket. The superstructure, or upper sections are also fabricated in a shipyard or fabrication yard in large sections.

These are set on the piles by a large floading crane to minimize time on the location, and also to take advantage of the large existing construction equipment for economy and speed.

This system puts all of the gravity load directly on the piling which can be driven until an adequate foundation is attained.

The horizontal load from wind and wave is carried through the jacket structure to the foundation material.

When the offshore industry first began in the U.S., very little information was available about the design procedure, and what are the actual forces from the environment. Through the years considerable effort has been expended, and it is now a very well established industry. Well known procedures and guidelines are available. The American Petroleum Institute has published recommendations for designing of offshore platforms, and considerably more information is available concerning the environmental conditions. Through the many advances in this industry, the offshore platform is now an accepted, safe, and conventional structure.

Platforms have been installed in the Gulf of Mexico in depths of up to 372 feet.

We have one under construction for the North Sea in 474 feet water depth.

The other major factor of this system is the pipeline. The pipeline system will actually include the two submarine pipelines, one from the buoy to the platform complex, and the other from the platform to shore.

An addition of the pipeline system would be a manifold or connection at the buoy end of the system, and two risers or vertical members ascending and descending the pipeline.

To handle the large volume involved, large pipeline will be necessary. Here again, a pipeline is not a new or unusual operation. We have laid thousands of miles of marine pipeline, and many of them have been in the large size required for this type of facility.

For a terminal we are now constructing in Saudi Arabia, a 56-inch pipeline will be laid out to the platform.

The marine pipeline is usually laid by what the construction industry calls a "laybarge". This is a non-self propelled barge, complete with all items necessary to join, coat, and help the pipe to the ocean bottom.

The joining process used is an assembly line technique for speed. The pipe is welded together at a number of stations.

When welding is completed it is X-rayed and coated, and the barge moves forward to one position which allows one joint of pipe to move over the stern of the barge, and a new piece is set on the front and the process continues.

Since a pipe of this size is too stiff and heavy to reach bottom it must be supported or buoyed up with a buoyant platoon or a "stinger" that helps the pipe on its way to the bottom.

After it is on the bottom the pipe would be buried or not, depending upon the environmental conditions, the need, and the type of bottom.

During the welding process, the welds are completely X-rayed.

After installation, the pipe is tested with pressures greater than anticipated. It is completely coated to resist corrosion with a protective material.

The pipe is also protected with an encasement of concrete which provides additional mechanical protection and added weight. The line is completely tested upon completion.

Locating the terminal offshore away from congested areas offers a number of advantages. It reduces traffic.

Locating the terminal offshore allows using larger tankers which should minimize the number of tankers needed. As far as we know, there have been no major spills resulting from loading or unloading operations from an offshore terminal.

From an engineering and construction point of view, an offshore tanker terminal is entirely feasible, and presents no hazards or undue difficulties.

To be able to unload tankers at the rapid rate required for economical operation, a large and expensive facility will be required.

Construction of this facility would certainly be a major engineering effort. However, the existing U.S. construction industry has the capability to design and construct an entirely adequate facility.

From an operational standpoint, an offshore tanker terminal is also entirely feasible. Built into the system would be both manual and automatic controls and safeguards to prevent accidents and to minimize problems should malfunctions occur.

Offshore tanker terminals have been safely operated in remote areas throughout the world. Certainly, it would be possible to operate a similar system in the U.S. continental area where more is known concerning the operating conditions.

Naturally, there will be periods of bad weather at any location where offshore operations cannot take place.

In this event, a tanker approaching the berth will be unable to moor, or a tanker already at berth, unloading, will have to terminate operations and move out of position until more favorable weather returns.

The offshore petroleum industry has certainly developed the capability required to safely plan, construct, and operate a facility of this type.

Certainly, it should be possible to operate them satisfactorily in the U.S. waters where we hopefully know more about our environmental conditions.

Thank you.

Mr. Matthews. Mr. Bernard Frankel is next.

Mr. Frankel. Mr. Chairman, gentlemen, as pioneer designers and constructors of single buoy moorings, Imodco has been concerned with providing solutions to problems of offshore terminalling of large draft tankers on a worldwide basis since 1958.

Accordingly, we are keenly interested in the various Federal studies presently evaluating the need, location and type of facilities to accommodate deep draft ocean-going vessels in the coastal waters of the United States.

Mr. Chairman, I am going to submit my statement for the record and summarize it in the interest of time.

Mr. DOWNING. Very well, your entire statement will appear in the record at this point.

[The statement referred to follows:]

STATEMENT BY BERNARD FRANKEL, PRESIDENT, IMODCO INTERNATIONAL, INC., LOS ANGELES, CALIF., DESIGNERS AND CONSTRUCTORS OF OFFSHORE MARINE TERMINAL FACILITIES, ON BEHALF OF THE NATIONAL OCEAN INDUSTRIES ASSOCIATION

BACKGROUND

As pioneer designers and constructors of Single Buoy Mooring, IMODCO has been concerned with providing solutions to problems of offshore terminalling in large deep draft tankers on a worldwide basis since 1958. Accordingly, we are keenly interested in the various Federal studies presently evaluating the need, location, and type of facilities to accommodate Deep Draft Oceangoing Vessels in the coastal waters of the United States.

In a similar and recent statement, made to the District Engineers, Los Angeles, Philadelphia, and New Orleans, wherein we discussed the most efficient, economic, and logical means of developing offshore marine terminal facilities to accommodate Very Large Crude Carriers (VLCCs) off the California, New Jersey and Gulf Coasts, it was subsequently heartening to note that the Corps of Engineers recognized the Single Buoy Mooring System as a preferred alternative to:

1. The dredging and deepening of existing channels and harbors.
2. Creation of sea islands and/or the construction of artificial islands.

It is our belief that the offshore oil port as proposed by the Maritime Administration (artificial island and/or sea island) calls for immense capital outlay—the greater, if not all of it, to come from the public. Certainly, before any of these actions are permitted to proceed—responsible regulatory agencies should be apprised of the fact that the major oil companies have had constructed and installed (over the past 15 years) and are today using, over 115 offshore marine terminal facilities (the Single Buoy Mooring (SBM) around the world—usually in remote areas and subjected from moderate to severe environmental conditions. See "Offshore Tanker Terminals: Study in Depth" attached hereto as Enclosure (1).

It is important also to note that the U.S. Military has had seven SBMs in service since the mid-1960's; two of which have been in heavily trafficked waters in Tokyo Bay.

Offshore Single Buoy Mooring facilities cost but a mere fraction of the $1 Billion proposed for the offshore artificial island port (i.e. approximately $35 Million for two SBMs inclusive of 2 x 36″ (ID) submarine pipelines each 8½ miles in length). And, too, in addition to their much lower cost, the SBM affords the following proven and tangible assets:

a. Economy of and safety in operation.
b. Flexibility.
c. Short construction lead time, and
d. Minimum environmental disturbance features.

Further to point d. above, and surely of directly related importance to those concerned with the environment, is the report "Preliminary Analysis of the Ecology Aspects of Deep Port Creation and Super Ship Operation" prepared for the U.S. Army Engineering Institute for Water Resources by the University of Maryland. In a discussion of PRINCIPAL POSSIBLE ECOLOGICAL IMPACTS, the report states: "the construction of *floating devices* (platforms)—(which would, of course, include Single Buoy Mooring)—with submerged connections with shore based facilities have the least effect. Construction of Piers, Causeways, or Islands that have fixed connections or bases on the bottom will have greater and longer lasting influence on the ecology of the area."

In addition to the foregoing, your attention is invited to an article appearing in the June 19, 1972 edition of THE OIL AND GAS JOURNAL (page 91) entitled: "API Urging National Superport Policy." The article discussed, in part, proposed facilities; i.e. offshore marine unloading docks via SBMs. Of particular significance to the discussion herein, the article states: "In the Gulf (of Mexico), API said, there are several projects which plan to use mono-buoys for unloading. This type of facility is favored for its safety, flexibility, low investment, economy of operation, short construction lead time, and *minimum effect on the environment.* Installation would be near the 100-ft. contour in the Gulf, with pipelines moving crude to shore. Several mono-buoy systems could be deployed strategically for the same investment required for a single artificial island superport, the industry analysis stated." Surely, the same logic would apply to the East and West Coasts of the United States and also to Hawaii.

OIL SPILLS/POLLUTION

During the past fifteen years, IMODCO has installed 43 Single Buoy Moorings. These are included in the total of over 115 SBMs previously mentioned, designed and constructed by ourselves and those of several other manufacturers and are located worldwide. In addition, there are approximately 350 offshore multi-buoy berths (the antecedent design of the Single Buoy Mooring concept), located throughout the world. To the best of our knowledge, there have never been any significant oil spills, caused by deficiency of Single Buoy Moorings manufactured by ourselves or of those of our competitors. Further, I know of no significant oil spillage caused by breakdown in the system of the multi-buoy berths.

In support of the above statement, you will recall that along the California coast, there are a total of some nineteen offshore tanker (multi-buoy) berths which have been in service anywhere from ten to forty-five years. These facilities are listed as follows:

Name of company	*Location of plant*
1. San Diego Gas & Electric	Encino Powerplant.
2. Union Oil Company of California	3½ miles southeast of Ventura.
3. Pacific Gas & Electric Co	Moss Landing Powerplant.
4. Pacific Gas & Electric Co	Morro Bay.
5, 6, 7. Standard Oil Co. of California	El Segundo.
8. Texaco, Inc	Estero Bay.
9. Phillips Petroleum Co	Ventura.
10. Phillips Petroleum Co	Gaviota.
11. Phillips Petroleum Co	Monterey.
12. Shell Oil Co	El Capitan.
13. Signal Oil & Gas Co	Elwood.
14. Gulf Oil Corporation	Huntington Beach.
15. Standard Oil Co. of California	Carpenteria.
16. Standard Oil Co. of California	Estero Bay.
17. U.S. Navy	Estero Bay.
18. PEMEX	Rosarita Beach (Baja, Calif.).

I invite your attention to the fact that, in almost every case, the above offshore tanker terminals are located adjacent to extremely popular and heavily used bathing beaches. The high population density along the Southern California coast, in particular, makes it most important that there be no spillage of oil from offshore tanker terminals.

In summary of the foregoing, I wish to state that within the 15 years that our Company has been in business, and to the best of our knowledge, none of our customers has been fined as a result of oil spillage or pollution in the waters or shorelines contiguous to their SBM Terminals.

It is also to be noted that one of our early SBM installations in Japan was located at Oita on the northern tip of the Island of Kyushu. Oita is adjacent to Beppu, the Riviera of Japan. During the 7 years this facility was in service (for the Kyushu Oil Corporation), there were no oil spillages.

I also wish to point out that there are numerous SBMs in Japanese waters—all subject to severe regulation in their operation by the Japanese Government, *primarily due to the very active fishing industry in that nation.* There have been no reports of water pollution due to oil spillage in these waters due to SBM failure.

OPERATING LIMITATIONS OF A TANKER ON AN SBM

It is entirely possible to moor a VLCC in wind forces of up to approximately 40 knots with swell/wave heights of up to 12 feet. A tanker, once moored to an SBM, can remain on the mooring in swell/wave heights of up to 20 feet with wind forces of up to 60 knots. Once moored to the Terminal, the vessel is free to load or discharge its cargo whilst weathervaning about the SBM, always responding to the resultant of force (i.e. wind, wave, swell, current, tidal effect).

We have examined the feasibility of installing a Single Buoy Mooring System in the Gulf of Alaska and in many places along the seaboards of the United States. We are confident that we can engineer, design, construct and install such facilities, inasmuch as none of the areas which we have examined present any unusual problems for us.

ENGINEERING DESIGN CRITERIA

A careful engineering analysis program establishes the criteria for the complete Single Buoy Mooring Terminal System. Tank testing and computer analysis are important major parts of this program.

The design and size of a particular Terminal System are directly related to the following factors:

(1) Maximum ship size to be accommodated.
(2) Number, type and flow rates of cargoes to be handled.
(3) Depth of water and tidal range.
(4) Maximum swell and wave heights.
(5) Velocity of current.
(6) Maximum wind force.

For example, a Terminal with a diameter of 10 meters designed to moor a 100,000 DWT tanker or ore-carrier in a 62 knot wind, 2.5 knot current, and in 70 feet of water, can also handle a 140,000 DWT tanker at the same location, but with maximum wind forces reduced to 55 knots.

The 12.5 meter diameter Terminal can safely accommodate 200,000 DWT tankers in winds up to 43 knots, while the 15 meter diameter system can service the 300,000 DWT to 500,000 DWT range.

It is our judgment that a Terminal for any size tanker or ore-carrier now under construction or contemplated can be designed, constructed, or installed.

Tank testing with precise models of Buoy Terminal systems is a normal feature of the engineering analysis.

Engineers program in the typical and atypical weather conditions—winds, waves, tides, swells, and currents. In this fashion, the Terminal design is subjected to more and greater forces than it will ever encounter in operation.

For more precision in design specifications, a sophisticated computer program provides practical data on the complete Terminal system—Buoy, floating and underbuoy hose, and submarine pipeline.

For Terminals up through 500,000 DWT handling capacity, engineers feed in a full series of design and environmental variables. The computer program then makes all calculations necessary to confirm the desired performance capability of the Terminal design.

EFFECTIVENESS AS A PRIVATE NAVIGATIONAL AID

The Single Buoy Mooring is fitted with a Navigation Light, Radar Reflector, and, where required, a Fog Horn. These equipments are provided with characteristics to conform with local Naval and/or Harbor Board requirements. Without question, they serve as a most positive augmentation to existing public navigational aids.

SUMMARY

In light of the hue and cry over a growing energy crisis in our country, it is submitted that an early and clear-cut enunciation of an offshore superport policy be stated by the Congress. Hence, it is considered urgently appropriate that heed be taken of a recent judgment by the American Petroleum Institute: "The offshore island, consisting of an artificially created land mass, lacks appeal for the oil industry. It requires a high capital investment by Government and Industry. A wiser use of capital would be to build multiple and less expensive installations (i.e. Single Buoy Moorings) at strategic locations along the coasts." These to be without expenditure of Federal funds and to be handled by the private sector.

In view of the foregoing, it is respectfully submitted that responsible local, State, and Federal Offices and Agencies direct their attention to an immediate solution to the urgent co-existent problems of: (a) the energy shortage, (b) absence of deep water ports in the U.S., and (c) growing worldwide fleet of VLCCs having too great a draft to enter U.S. Ports. There is ample experience and capability within these United States to design, construct, and to install an offshore deep water port (SBMs) in U.S. coastal waters at a minimal private investment—and now. The SBM has proven itself from Engineering, Economic, and Environmental standpoints. It is our opinion that monobuoy facilities to accommodate VLCCs up to the 475,000 DWT as proposed in the various and recent Corps of Engineers Studies are the only positive response to this urgent problem.

Mr. FRANKEL. The single mooring buoy, or SMB, has been developed because of the absence and inadequacy of loading ports and harbors in the vicinity of oil and mineral producing areas.

Secondly, the absence and/or inadequacy of discharge ports and harbors in major industrial regions, and thirdly, to complement the transportation economics in the employment of larger tankers and other bulk cargo carriers.

The solution as described in the enclosure to my prepared statement is the single buoy mooring, which I will briefly describe.

The single mooring buoy consists of a buoy which is placed out in the open sea directly above the end of the submarine pipeline which goes to the shore.

The buoy is attached to the seabed by means of anchor chains which, in turn, are fixed to the seabed by means of anchors or piles. This depends upon the constituency of the seabed.

Attached from the buoy to the end of the submarine pipeline are flexible hoses through which the oil will flow.

Attached to a rotating cargo manifold on the buoy is a floating hose. The tanker is moored to a rotating mooring arm on the buoy; the hose is attached to tanker manifold and the vessel may then commence loading or discharging, while facing into the sea or wind, responding to the resultant of forces.

A more detailed description of this procedure is contained in the enclosure of my prepared statement.

In connection with the foregoing, it has been heartening to note that the Corps of Engineers, following a long and exhaustive analysis of this subject, has recognized the SBM system as a preferred alternative to the dredging and deepening of existing channels and harbors, or in the creation of sea islands and/or the construction of artificial islands.

It is a fact that over the past 15 years there has been constructed, installed, and placed into service and now on order over 120 SBM's.

These facilities are located in nearly every corner of the globe, from a remote, desolate regions where they are subjected to the most severe environmental conditions to the more mild but more heavily traffic waters.

SBM's are operating in confined waterways, and they are also operating as far offshore as 100 miles.

In addition to the SBM there are approximately 350 offshore multibuoy berths, the antecedent to the SBM, and commonly known as the sea berth, in operation around the world.

Of these there are some 19 sea berths along the California coast which have been in service anywhere from 10 to 45 years. In almost every case, the California berths are located adjacent to very popular bathing beaches.

The high population density along the southern California coast in particular makes it most important that there be no spillage of oil from these offshore tanker terminals.

I also wish to invite your attention to the numerous SBM's and sea berths in Japanese waters. All of these are subject to severe governmental regulation. This condition is primarily due to the pressures of a very active and sensitive fishing industry.

A number of SBM's are located in the midst of active fishing grounds in that nation. This includes the U.S. military facilities at Hakozaki and Koshiba, which my own company designed and constructed and installed several years ago. There have been no reports of water pollution due to oil spillage in these waters due to SBM failure.

It is also important to note that one of our early Japanese SBM installations was located in 172 feet of water on the northern tip of the Island of Kioshi. This is adjacent to Beppu Beach, the Riveria of Japan.

During the 7 years that this terminal was in service, there were no reported oil spillage, nor were the beaches ever defiled by crude oil patches.

In discussing the foregoing it is to be noted that within the 15 years that our company has been in business, none of our customers have ever been fined as a result of oil spillage in the waters or shorelines contiguous to their SBM terminals, and to the best of our knowledge, the same is true of those SBM's installed by our competitors over a similar span of years.

A careful engineering analysis establishes the criteria for the complete single buoy mooring terminal system, the design and size of a particular terminal system are directly located to the following factors: Maximum ship size to be accommodated, the number, type and flow rates of cargoes to be handled, depth of water and tidal range, maximum swell and wave heights, current velocity and maximum wind force.

We have designed, constructed and installed an SBM in the Taiwan Straits to withstand a 58-foot breaking wave. It has withstood four typhoon seasons to date.

It is our positive judgment that an SBM for any size bulk carrier now under construction or being contemplated can be designed, constructed and installed, and successfully operated in conditions ranging from mild to the most severe.

We observed the mooring of a very large crude carrier, otherwise known as a VLCC, and oil bulk or cargo carriers or the OBO's in wind force up to approximately 40 knots, with wave heights up to 12 feet.

The vessels, once moored, remain fast, can continue their cargo operation in swell and wave heights of up to 20 feet, with wind forces gusting up to 60 knots.

It is an advantage of the SBM that once moored to the terminal the vessel is free to load or discharge its cargo while weathervaning about the buoy, always responding to the forces, wind, wave current, and tidal effects.

Single buoy moorings have been installed and are operating in the North Sea, the Taiwan Straits, the Tasman Sea, Bay of Fundy, the Cape of Good Hope, and in the Sea of Japan.

We have carefully examined both the practicality and the possibility of installation of SBM's in the coastal waters of the United States, inclusive of Alaska, Hawaii, and the Virgin Islands.

We are confident that we can engineer, design, construct, install, and successfully operate SBM's in U.S. waters inasmuch as none of the areas examined present any unusual problems for us.

The summary facts of this presentation which is based on 15 years of hard experience are that the SBM affords these proven and tangible assets: Economy in investment, low operational costs, flexibility in installation, short construction lead time, safety in operation, and minimum environmental disturbance features.

In conclusion, it is respectfully submitted that responsible local State and Federal agencies and offices direct their attention to a much needed solution to the urgent and concurrent problems of a growing world fleet of: (a) VLCC's and OBO's having too great a draft to enter U.S. ports and harbors; (b) the present and probable future absence of deepwater ports and harbors in the U.S. to accommodate these vessels; (c) the prohibitive cost in the dredging and maintenance of the channels, to berth large deep draft bulk carriers; and lastly (d) their prohibitive costs.

Mr. Chairman, it will cost anywhere from $500 million to $1 billion to construct an offshore artificial island port, as has been proposed in the Soros' study for MARAD.

There is ample experience and capability within the United States to design, construct, and install offshore deepwater ports consisting of SBM's in U.S. coastal waters, and at minimal private investment. The SBM has proven itself from the standpoint of engineering, economics and environment. It is our opinion that monobuoy facilities to accommodate VLCC's up to and beyond the 475,000 deadweight tonnages as proposed in the various and recent Corps of Engineers study is the only possible response to this urgent problem.

In amplification of some of my remarks I would like to show you some photographs.

This is a terminal that our company installed for Esso in Singapore some years ago. It was built to accommodate VLCC's of up to 250,000 deadweight tons. It provides for a throughput discharge of up to 13,000 tons per hour. The terminal has been operating very successfully, and as you well know, the waters of Singapore Harbor are heavily trafficked, Singapore being one of the busiest ports in the world.

This is a facility that our company recently completed on the east coast of Mexico. This is the second SBM facility to have been installed in North America; the first having been installed in the Bay of Fundy some years ago, operating in conjunction with the St. John's Refinery.

This is a close up shot showing the *Atlantic Princess*, about 85,000 deadweight, close up to our buoy in Singapore.

Thank you, gentlemen.

Mr. Downing. Mr. Frankel, all the pictures and diagrams we have up here shows one buoy.

Is it possible that you have multiple buoys around the platform?

Mr. Frankel. Our diagram explains the handling of a single ship at one time.

The proposals that are being set forth by LOOP and Seadock show a multiple spread of single point moorings. This is to accommodate more than one vessel coming into the proposed superport.

This does not present any problem as both Mr. Lee and my own company have done this in waters of Indonesia and the Persian Gulf, wherein multiple single buoy moorings have been installed both to handle storage vessels and export tankers.

The only requirement is to provide enough spread between the buoys so that there will be no collision effect.

Mr. Downing. Mr. Lee, getting back to joining these pipes I am quite interested, and I find I do not understand it. You assemble and weld the pipes on the deck of the barge?

Mr. Lee. Yes, sir; my explanation was rather quick. I was trying to get through a long lengthy procedure.

The idea is that actually the pipe, if it is short, it could be made up on shore and pulled out to location on the ocean floor.

When the line is too long for that to be accomplished, then it is necessary to actually assemble the pipe more or less in place and lower it to the ocean bottom. That is done by welding the joints of pipe together.

Mr. Downing. On the bottom?

Mr. Lee. On the deck of the barge. They are welded together, and after several joints are welded together, you begin a process to lower the pipe to the ocean bottom.

To do it in an assembly line technique, welding is accomplished in several positions.

Mr. Downing. Does the pipe have the flexibility so it will not break?

Mr. Lee. With the proper support it will not break. I mentioned it had to have some additional buoyant platoon that extends from the stern of the barge close to the ocean floor to provide support for the pipe on its way down.

Unfortunately, I do not have a diagram illustrating that technique.

Mr. Downing. Mr. Matthews, I understand your organization opposes all of these bills, is that correct?

Mr. Matthews. No, sir; we only oppose the two bills presently pending before this committee. We oppose basically the idea of bringing a new Federal agency into this licensing and the regulating picture to license or regulate facilities very similar to those that are already being regulated by the Federal Government.

Mr. DOWNING. You believe it should be in Interior and not Commerce?

Mr. MATTHEWS. Yes, sir; that is the basic problem with your legislation.

Again, if it is to be Commerce, then I am sure the implementing agency would be NOAA; and, if the present suggestion to transfer NOAA to Interior in the new Department of Energy and Natural Resources is approved by the Congress, then even that problem is removed. This new DENR would bring together the expertise that NOAA does have, which would be advantageous in a consideration like this, with some expertise that the Geological Survey has. In fact in the DENR proposal, Geological Survey and NOAA would be joined together in the new agency.

Mr. DOWNING. Do you think the joint jurisdiction is feasible where Commerce would take over certain parts of the operation, and Interior would take over other parts?

Mr. MATTHEWS. In the event there is no Department of Energy and Natural Resources, anything can be done, of course, Mr. Downing.

I think that for simplicity of regulation it would be better if the Interior Department had it all, as it does in the case of other offshore facilities, fixed platform structures and so forth.

Mr. DOWNING. Thank you.

Mr. Anderson?

Mr. ANDERSON. Thank you, Mr. Chairman.

Mr. Frankekl, you list the 18 installations off the Coast of California. You have installed most of these?

Mr. FRANKEL. No, these are all multibuoy berths.

Mr. ANDERSON. None of these are yours?

Mr. FRANKEL. No, sir.

Mr. ANDERSON. Now, most of these that I am looking at here are within, I believe, the 3 mile limit, are they not?

Mr. FRANKEL. Yes, sir.

Mr. ANDERSON. Are any of them outside the 3 mile limit?

Mr. FRANKEL. To the best of my knowledge, no. These facilities were installed back in the years when the tankers were relatively small.

The first ones were put in when there were only 10,000 deadweight ton tankers chasing up and down the California Coast, and as the years progressed, while we had the T–2 tanker plying up and down the coast.

Most of these were either servicing the refineries that we have along the coast, or in the drugstore trade, dropping off its product here and there, as they moved up and down the coast. They were small vessels, and the multibuoy berth is able to accommodate small ships.

Mr. ANDERSON. Well now, anything within the 3 mile limit would be installed, I assume, it would be under California law in the case of California.

Mr. FRANKEL. I would assume so.

Mr. ANDERSON. Now, under present law, anything out beyond 3 miles, who presently has the jurisdiction to install these?

Mr. Frankel. I imagine this would come within the purview of the Federal Government, but as you know, along the California Coast, the procedure has been over the years that when one of the oil companies, or one of the power companies, wanted to put a multibuoy berth in, they made application to the Corps of Engineers for a permit, and the Corps of Engineers would offer a public notice describing the facility that was to be installed, when, where and what it was to perform, and I think the notice lasted for something like 30 days.

In that case, if there were no objections, the permit was granted, and the installation of the facility proceeded.

I am not acquainted with the provisions of our own State laws in connection with the granting of a permit for such a facility.

Mr. Anderson. This is the point I want to work toward. I notice in your remarks you said that, it is the responsibility of the Federal, local and State governments to work together, or words to that effect.

Mr. Frankel. Yes.

Mr. Anderson. And then I believe Mr. Matthews, in his remarks, said that in the case of H.R. 2020, which would give each State the statutory veto power, that the NOIA was opposed to the concept of this bill.

I just wonder where we were on this. Do you believe that anything out beyond the 3 mile limit should be under the total control of the Federal Government, and if so, how do you adjust that with the other remarks that would be the responsibility of local, State and Federal Government?

Mr. Frankel. As you know, the single buoy mooring is connected to the shore by the means of a submarine pipeline. It is not isolated out in the open sea. That means that that pipeline will pass through Federal and State and local waters.

In the case of Los Angeles Harbor, for example, the Port of Los Angeles is studying the feasibility of creating an offshore berth well beyond the Los Angeles breakwater. This would be beyond the port confines, within the jurisdiction of the city of Los Angeles, but the pipelines would have to transit the Port of Los Angeles water, and enter into city property.

Now, we would have all bodies involved there. There would be the Federal Government, the State, the port and the city.

This is what I am referring to by the various agencies who are concerned with this matter.

Mr. Anderson. Well then, do you feel that the States should not have a veto power, but should somehow be consulted? Is that it? On a sort of voluntary basis, and if they do not like what the Federal Government is doing, that the Federal Government can go ahead and do it any way?

Mr. Frankel. I think your suggestion is correct.

Mr. Anderson. That is not my suggestion. I am trying to get your opinion.

Mr. Frankel. I think they should be consulted.

Mr. Anderson. Do you think the State or local government should have any right in determining the location of sites, for example?

Mr. Frankel. Yes, I do.

Mr. ANDERSON. In other words, if the Federal Government says, we think the line that comes out of the Los Angeles Harbor should go over here, Los Angeles Harbor people say it should be over here, you feel the Federal Government should have the authority to have the final word on determining location as to where these should come out and so on?

Mr. FRANKEL. I think the situation varies from State to State.

In the State of California, the areas that we are discussing, the Port of Los Angeles or Long Beach.

Mr. ANDERSON. Those are both in my district, so I am acquainted with them.

Mr. FRANKEL. We have a lot of heavy ship traffic in the area.

The Coast Guard is directly concerned with the safe navigation of those vessels which are transiting our waters, either going coastwise or which are entering or departing from our ports.

There is, of course, a deep Federal interest because of the Coast Guard responsibilities there.

We would want an offshore facility to be removed and apart from a ship traffic lane.

The ship traffic lanes normally are established by the Federal Government and/or with the suggestion and cooperation of the local authorities who are operating the ports.

There must be a coordinated approach to the establishment of these facilities and the siting of them.

Mr. ANDERSON. But if you take all the authority away from the local governments and the State, there may not be the cooperation from the Federal Government that there might be if there was some authority.

For example, I was wondering if we should not allow the States to decide to have higher standards than the Federal Government sets.

Do you think they should be able to have that?

Mr. FRANKEL. I think so. I see no reason why not. Whatever the standards are that the States would impose, if they were much higher or more stricter or more severe standards, these can be responded to easily enough by the suppliers of the facility or the constructors of them.

We have worked in many parts of the world, and the requirements of both local authorities and governmental bodies have usually been meshed; and we have always been responsive to these combined requests or the requirements of them.

Mr. ANDERSON. Well, thank you very much. I have been told my 5 minutes have expired.

Mr. DOWNING. Mr. Forsythe?

Mr. FORSYTHE. Thank you, Mr. Chairman.

Mr. Matthews, are you aware of a recent GAO study on the effectiveness of the geological survey in regulating the offshore structures.

Mr. MATTHEWS. No, sir.

Mr. FORSYTHE. I understand the report is somewhat critical of the operation of the Geological Survey.

Mr. MATTHEWS. This is the GAO?

Mr. FORSYTHE. Yes.

Mr. MATTHEWS. I am not familiar with that.

Mr. FORSYTHE. I join Mr. Downing in feeling that we do not necessarily have all the expertise in this one Agency. Maybe we need to pull together some of the expertise we have in NOAA and the Coast Guard, in this area.

Mr. MATTHEWS. Mr. Forsythe, I agree completely. That is why I said we would have the best of all possible worlds in this particular regard if NOAA and GS were brought together, we would have all the expertise, so to speak.

I think, given the current situation, that it would be better to use the existing experties in GS and BLM, calling heavily on NOAA and their expertise in a consultative capacity.

As to the question raised by Mr. Anderson a while ago, while we would oppose the absolute veto by a State, we most assuredly, very strongly, advocate that the States cooperate and the Federal Government cooperate with the State.

As far as the State is concerned—and we are talking about international waters, beyond the three-mile limit—when one gets within the three-mile limit, there are many other efforts and activities available to a State to allow them to control very effectively where this pipeline is coming ashore or where anything else is going.

So the State is going to have a voice in this whole process. So the whole process should be a consultative process within Government agencies, with the States, with localities and the various disciplines interested in the subject.

Mr. FORSYTHE. I would certainly support that.

Mr. ANDERSON. Would the gentleman yield?

Mr. FORSYTHE. Yes.

Mr. ANDERSON. I do not want to take a point of issue there, but there is a difference. I think you have to give the States some control, where they do not have any authority at all, to cooperate.

Mr. MATTHEWS. In international waters?

Mr. ANDERSON. Yes. For example, I recall the fact that in the case of California we have, I think, the best requirement for offshore drilling out to the three-mile limit. We created the Santa Barbara Preserve and said that is the end of it. The Federal Government said, we are going to drill out there anyway.

Well, we took them to court. They won. They put the oil wells in, and you know what happened.

As a result we had the Santa Barbara oil spill. If the State had had veto power, and the State said you could not do it, the oil would not be drilled in the first place, and, secondly, if it had been drilled, the State requirement would have been tougher.

I would like to see in this legislation that we have at least the opportunity to have stronger requirements for each State, because each State is a bit different.

Thank you, Mr. Forsythe.

Mr. FORSYTHE. I have one other area of questioning.

I refer to the problem of weather conditions. I think it was Mr. Frankel who made a considerable point about the North Sea and about the adverse weather conditions.

Do you believe, based on your experience, that we would be able to build these facilities along the Atlantic coast without fear of weather problems?

Mr. Frankel. Yes, sir, there are two points here, Mr. Forsythe. One is that as far as from an engineering standpoint the facilities can be designed and installed to survive under the very worst conditions that could ever pertain in that area along the Atlantic seaboard.

Now, that is survivability. Under the worst conditions, you would never have a tanker on that mooring. The other point is to be able to install a facility which would be able to accommodate a VLCC and the environmental forces to which it is designed to accommodate such a ship. And, as I said, I have witnessed the ships remaining on a moor in wind forces of up to 60 knots.

Now, here again, there is a human factor that comes in there, how wise is the master of that ship, or what are the company requirements? When do they break off?

As far as design criteria, we have examined about 15 spots along the coasts of the United States, and we have looked very carefully into the environmental requirements there, and we know that we can design, install facilities to match them.

Mr. Forsythe. I assume because of the more severe weather problems that it would be more costly to construct such a facility along the Atlantic coast, as compared to the gulf coast.

Mr. Frankel. Speaking to an individual unit of a single buoy mooring, on the gulf coast we would design to the 100-year storm. We would take into consideration the great hurricanes that occur down there, the same way up on the eastern seaboard.

I think it would be pretty much of a standard.

Mr. Forsythe. It would not be any great difficulty. The time of construction would follow that same pattern?

I see that Mr. Lee is nodding yes.

Mr. Lee. Since there are construction facilities on the gulf coast specializing in the fabrication of the platform components, it would probably be economical to build them in one of those facilities and transport them to the east coast, which would add a certain amount to the coast, but it does not change the economics very much.

Mr. Forsythe. While I have you on the microphone, Mr. Lee, you, of course, talked about the offshore pumping stations.

Mr. Lee. Yes.

Mr. Forsythe. What is the distance involved before you have to get into an offshore pumping station?

Mr. Lee. That depends entirely on the capability of the tanker pumps, and if it is a facility which is designed for and will use exclusively the new tankers, the new tankers have a pumping capability that could pump in large amounts of oil 3, 4, or 5 miles.

If some of the older tankers with smaller pumps are used, their capability is usually much less. If the shore is 5 miles or farther, it is usually best to locate a pumping facility as near as practical.

Mr. Forsythe. My time has expired.

Thank you very much, Mr. Chairman.

Mr. Downing. Counsel has a question.

Mr. Heyward. I would like to ask a couple of questions about the operations of the ships at the mooring point, when they are discharging, and would be happy to have either of you answer them.

First, was the seaberth that you referred to the same as the SBM mooring that Mr. Lee was referring to?

Mr. Frankel. That is another name for it.

Mr. Heyward. This is the type of facility, for instance, that is located off Barker's Point near Honolulu?

Mr. Frankel. Yes, sir, the same.

Mr. Heyward. What size ships do those moorings accomodate, or could they accommodate?

Mr. Frankel. The facility at Barkers Point is run by Chevron, or is owned by Chevron.

They have taken ships in there, I think, of up to about 80,000 or 90,000 deadweight tons.

In that particular facility it must be borne in mind that they must use tugs to assist them in the moor.

Mr. Heyward. They are also limited by weather conditions—right?

Mr. Frankel. Yes, sir, that is correct.

Mr. Heyward. In connection with waves and swell activity, you mentioned wave and swell heights, and when we get into the length of swells and their periods, how much surge is involved in, say, a tanker of 250,000 tons?

I realize the larger the tanker the less the influence, but what would you think the safety factor should be as far as draft is concerned related to the depth?

Mr. Frankel. Well, in designing a particular buoy, we take into consideration the maximum size vessel under full-load conditions, which will have gone into that facility.

We also take into consideration water depth, maximum tidal phenomenon which will ever occur in that area, maximum swell and maximum wave, and any other force that can be considered, even those which are extraordinary, tidal wave effect, and we take into consideration all these factors and recommend the siting of the buoy in a water depth that would provide for the vessel to arrive at that spot, be permitted to load or discharge without ever fear of bottoming with a maximum swell and wave occurring.

Mr. Heyward. So that it would differ from location to location?

Mr. Frankel. Yes, sir, they do.

For example, we have installed, we habe a buoy that we built for Gulf Oil about 7 or 8 years ago, located about 16 miles off of Nigeria. The J. Ray McDermott Co., in fact, installed our buoy there.

This facility is subjected to almost a continuous swell effect a good bit of the year and these swells range anywhere from 12 to 20 feet. That is from crest to bottom.

In Ulsan, Korea, we have two buoys, facing the Sea of Japan. Everyday at noon, almost like clockwork without failure, year-round, there is a tremendous swell that sweeps in and lasts for about 5 or 6 hours, and this again ranges anywhere from 12 to 18 feet. Tankers enter and successfully moor during these times, make fast, discharge their cargoes, and then proceed on their way. There has never been any bottoming of ships.

Mr. Heyward. There would have to be some safety factor cranked into the project to be sure we do not have any bottoming in the future.

Mr. Frankel. That is a valid and very correct point.

Normally, a fact orof safety is allowed for a distance from the keel of the ship to the sea floor. It could be anywhere from, say, 10 percent of the vessel's molded depth or greater.

Mr. Heyward. In connection with light winds and calm weather, how much problem is there is the ships surging up to the buoy?

Mr. Frankel. May I just show you this one photograph again?

This is about an 85,000 deadweight tonner riding up on the buoy. This is in Singapore.

In designing an SBM, we normally allow for a lateral displacement of the buoy of one times the buoy's own diameter, so when the vessel does ride up on the terminal, she can nudge it ahead about once its own diameter.

These buoys range in diameter anywhere from, oh, 20 feet to up to close to 50 feet. As the buoy is displaced in the water, the ground legs which lie in the direction toward the tanker tend to take a strain and they pull the buoy back and the ship will ride off the buoy.

Mr. Heyward. So it is designed so that there would be no chance those lines going down to the bottom containing oil to be parted. Is that correct?

Mr. Frankel. That will never occur.

Mr. Heyward. How much time generally would it take for a 250,000 deadweight tonner to unload, approximately—1 day?

Mr. Frankel. That is the normal rule of thumb that most of the operators and the terminal refinery operators require. They like to

Mr. Heyward. Now, Mr. Lee, in connection with unloading, if we
get their ships in and out of there in a day's time.
have more than one single point mooring with, say, two ships unloading at the same time, is there enough capacity in the pipeline going ashore from some of these designed projects, as far as you know, to take care of oil from both ships, or would there be some major storage capacity on the pumping platform?

Mr. Lee. Storage offshore would be most unusual and very prohibitive in cost for the facilities which we worked on. It is a matter of economics.

But the pipeline and the pumping facilities can be sized for any desired quantity. The big one we are building now in the Persian Gulf can unload three tankers at once.

ward. There would be a limit, though, once the project is underway on the number of ships that could be effectively handled dictated by the size of the pipeline going from the pumping platform into shore?

Mr. Lee. Yes, sir, as the project grows more buoys are added, with pumps, and more pipelines. The system has to work as a team, be-
a system that had one pipeline and one pumping station and one
cause one buoy can unload at a certain rate. You could conceive of
buoy all sized equally, or the system could be sized for two buoys or three.

Mr. Heyward. When you are constructing the platforms themselves, the jackets, the legs for the platform are all in one piece when they are put in position?

Mr. Lee. The pilings are not.

Mr. Heyward. I said the jacket.

Mr. Lee. The jacket itself is one piece.

Mr. Heyward. And the piling is put in, in sections?

Mr. Lee. And welded together or spliced as you drive it.

Mr. Heyward. How much penetration for a platform in 100 feet of water?

Mr. LEE. We have had as little as 100 feet penetration and sometimes 400 or 500 feet in soft areas.

Mr. DOWNING. We want to thank you gentlemen very much.

Next, I would like to call Mr. Earl W. Clark and Talmage E. Simpkins, codirectors of the Labor-Management Maritime Committee. Gentlemen, welcome to the committee.

STATEMENT OF EARL W. CLARK AND TALMAGE E. SIMPKINS, CODIRECTORS, LABOR-MANAGEMENT MARITIME COMMITTEE, WASHINGTON, D.C.

Mr. CLARK. The Labor-Management Maritime Committee whose membership includes steamship lines in both the liner and tanker trade and maritime unions, both seagoing and shoreside, supports the concept of H.R. 5091, a bill to amend the Marine Protection, Research and Sanctuaries Act of 1972, and its counterpart bill, H.R. 5898, which would amend the Merchant Marine Act of 1936—both construction of large-scale offshore structures, including deepwater bills, in essence, having the fundamental purpose of enabling the terminals and environmental protection essential to such construction.

The context of these bills, taken in sum, strikes a rather plausible balance between the urgent need on the one hand to protect the natural resources of the sea from pollution and other impairment and, on the other hand, to provide the vital energy resources upon which the very survival of the U.S. economy so essentially depends.

We note that the bills as drafted place primary responsibility with the Secretary of Commerce for programs authorized in the legislation while the administration would place such responsibility with the Secretary of the Interior. Since domestic and international commerce involved with energy supply and the need for environmental protection are so intrinsically related, there must, of course, be the utmost cooperation between such agencies.

Consultatory and other cooperative relationships are directly provided in the legislative proposals, including the responsibilities of the U.S. Coast Guard in navigational matters.

We would hold that agency coordination and cooperation outweigh the actual determination of where the program administration is lodged.

However, we would favor and support the current provisions of the bill which lodge such responsibility with the Secretary of Commerce. Such a lodging of authority in areas involving transportation factors connected with seaborne cargo transport is in consonance with earlier action by the Congress when maritime affairs were left with the Department of Commerce rather than the Department of Transportation.

Clearance of environmental problems between the several agencies involved with such matters can still be lodged in the Department of the Interior as an overall coordinating agency, if desired.

We note the Department of Transportation, through the Office of Pipeline Safety, has responsibility for insuring the reliability of pipeline systems from deepwater port terminals, not only to the shore but to the refineries and the consumer.

The Department has many other items of interest, including the U.S. Coast Guard aspects. In fact, so many agencies are involved and so much legislation has been enacted on environmental subjects that the President is considering a new Cabinet Department of Energy and Natural Resources to handle such programs.

We would feel that overall coordination of environmental relationships might well be lodged in the Department of the Interior, or, if established, such new department, without disturbing the Department of Commerce responsibilities as provided in H.R. 5091.

As to other more specific items of consideration, we do not favor giving States the sole determination as to the existence of deepwater ports opposite their shores.

First of all, such deepwater ports would be located beyond the waters controlled by States or by the United States, the latter either by treaty or international agreements.

The projected locations, estimated at some 15 to 25 miles from shore, are thus beyond the general 3-mile international understandings, as well as the 12-mile fishing right boundaries.

Such matters involved with international waters are logically within the Federal scope rather than the States.

It has been aptly pointed out, however, that without State cooperation and consent, the operation of offshore deepwater facilities would be greatly hindered, if not made impossible.

Refusal to permit counterpart shoreside facilities, commensurate with deepwater terminal needs, would tend to nullify the entire operation, as would excessively rigid administration of State land-use programs.

We are firmly of the belief that the very crucial elements of our energy crisis will ultimately force a Federal-State so-called detente in dealing with both environmental protection and energy supply. This will ultimately be true out of sheer necessity.

We are vigorously opposed to granting the States the right of veto of superport plans. State review as a part of the process of Federal-State consideration and understanding is essential, but this should not involve a State veto right.

It is as unthinkable for overdeveloped environmental considerations to destroy our economy as it is to permit our economic and industrial conduct to destroy our environment.

In either case, human life is jeopardized and a proper intelligent balance most certainly must be achieved. It is equally unthinkable that the North Atlantic States, where energy needs are the most acute in the entire Nation, would deny the development of deepwater tanker terminals off their shores, thus expecting other States to solve North Atlantic energy needs by permitting deepwater port construction on their behalf.

Unfortunately, there are bills presently introduced in the Congress which would seem to lead in just such a direction.

It is recalled that the North Atlantic States opposition to a bill to transport a percentage of oil in U.S.-flag ships killed that legislation in 1972. Putting these two positions back-to-back would mean carrying imported oil from North Atlantic use in foreign ships to ports other than their own, while relying on such processes to supply energy to the most volatile blackout and brownout areas in the United States.

We think this is inconsistent with the energy needs of such States and, therefore, we oppose all legislative proposals intended to forbid the construction of deepwater tanker terminals off the Atlantic Ocean shores.

In this connection, a Department of Transportation witness has testified that

> Construction of supports is economically justified in the North Atlantic region, while on the gulf and Pacific coasts such construction would be economically justified only if the volume of crude import increased substantially.

Thus, the North Atlantic area, where oil and petroleum product import needs are most acute, is more resistant to their construction—a condition which must of necessity change and change sharply.

The extent to which present land-use guidelines or problems under the Coastal Management Act can be met by superport construction, opposite existing refineries, is in question.

Where such is not possible, something has to give in the way of other locations, for America must meet her energy crisis soon and on a practical basis.

In the administration's testimony presented before the committee by the Honorable Russell E. Train, Chairman of the Council on Environmental Quality, six major points are set forth. We shall deal with them in order.

1. The administration bill, H.R. 7501, holds that the Department of Interior provides the best "authority to protect" the environment. This may be true with respect purely to aspects of environmental protection. We do not agree that this holds with respect to deepwater terminal construction.

In addition to (1) overall Department of Commerce responsibility in the field of trade and ocean transportation, (2) the waterborne transport responsibilities currently lodged in the Maritime Administration within the Department of Commerce, and (3) the close working relationship between "such agencies and the U.S. Coast Guard in the Department of Transportation," it is pertinent to point out that NOAA is also lodged within the Department of Commerce.

This agency is deeply involved with both transportation and environmental protection and, as such, can provide invaluable assistance for coordination between urgent deepwater port needs and environmental facets associated therewith.

We would, therefore, support H.R. 5091 and its counterpart, H.R. 5898, placing the overall authority for superport construction with the Secretary of Commerce but requiring, at the same time, the closest coordination with all affected environmental agencies and particularly the Department of Interior.

This latter Department may well be used as an overall coordinating agency for all nonconstruction, nonoperational and nonnavigational aspects.

2. Our second point is similar to the first but, as in the Council of Environmental Quality testimony, addresses itself to the question of broad-basedness of authoritative agency responsibility.

The administration's bill contends that deepwater port development deals with important energy and land-use issues as well and that, therefore, a broader absed agency is preferable; namely, the Department of the Interior.

While recognizing that the Department of Interior is deeply involved with domestic energy supply, including oil drilling on the outer continental shelf, we still fear that, taken in the broad context, greater emphasis might be placed on pure environmental matters than energy transportation, particularly in the foreign import supply area.

It would be against the national interest if attention to the former became so all-possessing that great detriment to the latter would ensue. Certainly the Department of Interior could only be broader-based principally with regard to environment.

It would certainly appear that the Department of Commerce would be immeasurably broader-based in transport and deep sea terminal construction—the specific purpose of the legislation.

We believe, therefore, that the administration's contention on overall broad-basedness has its limitations.

3. The administration questions the one-time nature of a certification as provided in H.R. 5091. It seems to argue for a continuing licensing and regulatory approach. If this has merit, H. R. 5091 could be so amended, placing any responsibilities, in addition to licensing, in the Department of Commerce.

However, we would point out that continuing surveillance of the operation would result under the penalty exaction provisions of the subject legislation of this hearing as currently provided therein.

4. The administration holds that stiff and criminal penalties for violation of the condition of the license should be established. Certainly penalties for such violations are warranted. H.R. 5091 provides strict civil penalties. If further penalties are deemed in order, H.R. 5091 could easily be so amended. We, therefore, see no justification in lodging authority with the Department of Interior due merely to differences in penalty assessment as between H.R. 5091 and the administration's bill, H.R. 7501.

5. The administration bill provides for revocation or suspension of a deepwater port facility license. We would prefer penalty assessment sufficient to protect against environmental impairment rather than license revocation, although some provision for the latter may be necessary under severe condition of violation or environmental disregard.

Realistically, no one will invest hundreds of millions of dollars in a deepwater terminal facility where revocation becomes an easy matter solely in the hands of purely environmentally-oriented officialdom.

We would prefer a continuing inspection service carried on by the Department of Commerce in cooperation with other environmental agencies, with wording in the committee report that stiffer penalties may be proposed for enactment if experience shows it necessary to insure further compliance with environmental requirements.

6. The administration points out that H.R. 5091 is silent on pipelines that bring the oil to shore. We believe the bill may have purposely omitted this reference since presently this function would appear to be lodged in the Office of Pipeline Safety in the Department of Transportation. The bill might well speak to this relationship and responsibility.

Lastly, we would point out that deepwater ports are most essential to help relieve tanker-port congestion. With energy imports expected to more than double by 1985 or sooner, the port traffic in oil and petroleum products could become massive indeed, with correspondingly augmented accident and spill incidents.

Even with an appreciable number of deepwater terminal ports in operation, such incidents will undoubtedly lead to greater navigational regulation due to the further development of the smaller tanker shuttle service between regular U.S. ports and the noncontiguous foreign port refineries from Newfoundland to the Caribbean.

Without the deepwater terminals, oil from the Near East and other supply areas would require smaller oil transport tankers in much greater number, which would, in turn, make both the import of oil more difficult and the hazards to the environment more precarious.

It is, therefore, most urgent that legislation of the nature of H.R. 5091 and H.R. 5898 be passed at an earlier date. We fully realize that these legislative proposals were introduced for the purpose of initiating hearings leadin gto required enactments governing the subject of energy imports and that amendments will undoubtedly be required as a result of the lengthy hearings held.

We would recommend to the committee that in so doing, the following items, condensed into three essential points, be sustained:

1. A proper division between the authorities in the field of environmental protection on the one hand and transport energy on the other. In this regard, we favor the transportation and construction features lodged with the Department of Commerce, with proper liaison with the Department of Transportation, including its U.S. Coast Guard responsibilities.

On the other hand, we would not oppose lodging overall environmental protection coordination with the Department of the Interior. We do oppose the single agency proposal of H.R. 7501.

2. A full review between Federal and State authorities on each project proposal to ensure that full consideration be given to the programs, responsibilities, and desires of the affected States but without veto authority lodged at the State level.

3. A certification for depwater terminal development, while requiring surveillance for compliance associated with reasonable penalties, must not be subjected to such regulatory rigidity as to create any continuing imminence of cancellation, as such a condition would only serve as a deterrent to investment of hundreds of millions of dollars in facilities so necessary to our national energy survival.

We thank the committee for the opportunity of making this statement of our position on both H.R. 5091 and H.R. 5898 and commend the committee for its foresight in moving forward on a timely basis with legislative proposals to meet the urgent energy needs of this country.

Mr. Chairman, we do favor a division of authority and therefore support the bill that is being heard here in so far as lodging, construction, and operational features are concerned.

I will not elaborate on that, Mr. Chairman. I know you have a roll call.

I would like permission to file for the record the national position of the Propeller Club of the United States and also my letter to the

Honorable Leonor Sullivan, Chairman of this Committee, dated July 11, 1973.

Mr. Downing. Without objection, those two documents will appear in the record at this point.

[Documents follow:]

Labor-Management Maritime Committee,
Washington, D.C., July 11, 1973.

Hon. Leonor Sullivan,
Chairman, Merchant Marine and Fisheries Committee,
Longworth Building,
Washington, D.C.

Dear Mrs. Sullivan: The Labor-Management Maritime Committee is appearing and filing a statement in support of H.R. 5091 and H.R. 5898.

In addition to our testimony, we respectfully request permission to file, as a matter of information to the Committee, a National Position taken by the Propeller Club of the United States in support of "Building a U. S. Tanker-Facility Complex."

Respectfully,

Earl W. Clark,
Talmage E. Simpkins,
Co-Directors.

The Propeller Club of the United States, Position No. 7—1973, Building a U.S. Tanker-Facility Complex

BACKGROUND

Heavily industrialized United States, with only six percent of the world's population, consumes approximately one-third of all energy used throughout the world. By 1985 our energy requirements will more than double while our domestic supplies will prove increasingly inadequate.

The President has indicated that 90 percent of our consumed energy comes from three sources: natural gas, coal and petroleum, but points out (1) the increasing scarcity of gas augmented by ill-considered regulation, (2) the low energy percentage derived from coal with its persistent environmental problems, and (3) the inability of domestic oil production to meet demand.

It is obvious that, for the foreseeable future, oil and gas and their products must be imported from the Middle East and other foreign sources if we are to meet our vital energy needs. A recent proclamation by the President removed all existing tariffs on imported crude oil and refined products and suspended direct control over the quantity of such imports.

Along with these proclamations, leading to greatly increased energy imports, stands the Merchant Marine Act of 1970 with its provisions to facilitate the construction of large and more efficient U. S. flag tankers. Such vessels must have a viable tanker-offshore deep water facility complex to handle energy transport. Such a tanker-facility complex can be provided within the context of existing environmental enactments, sensibly administered.

Action to create such an industrial complex should proceed without delay in the interest of protecting energy supplies so vital to the nation.

POSITION

The Propeller Club of the United States calls for the construction of an adequate number of super tankers in domestic shipyards for operation under U. S. Registry to enable American Flag vessels to carry a substantial portion of petroleum and petroleum products imported into the United States. Such tankers should be owned and operated by U.S. Flag companies and meet environmental standards. The Propeller Club supports the construction of environmentally approved counterpart off-shore deep water facilities on all U. S. coasts to supply and protect energy sources vital to the economy and national security of the nation.

Mr. Downing. We thank all of you gentlemen for appearing here today.

The Chairman of the full committee, Hon. Leonor Sullivan, has requested this letter from O. William Moody, Jr., dated June 29, 1973, to be inserted in the record. If there is no objection, it will appear at this point along with other information supplied.

The committee stands adjourned, to meet tomorrow morning at 10 a.m.

[The information follows:]

Maritime Trades Department,
American Federation of Labor and Congress
of Industrial Organizations,
Washington, D.C., June 29, 1973.

Hon. Leonor K. Sullivan,
Chairman, House Merchant Marine and Fisheries Committee,
Rayburn Office Building,
Washington, D.C.

Dear Madam Chairman: During the past several weeks, the House Merchant Marine and Fisheries Committee has been holding hearings on H.R. 5091 and H.R. 5898, two bills which will set up definite U.S. policies governing the planning and construction of deepwater ports.

The AFL-CIO Maritime Trades Department congratulates the Committee for its initiative and foresight in holding hearings on this vital subject.

The MTD has long supported the construction of deepwater ports in the U.S., and we feel that the pending legislation, particularly H.R. 5898, will speed the accomplishment of this goal.

We have prepared a detailed statement, setting forth the view of the MTD on deepwater port development. We would ask that it be included in the record on this important subject.

Sincerely,

O. William Moody, Jr.,
Administrator.

Statement by the AFL–CIO Maritime Trades Department

The House Merchant Marine and Fisheries Committee now has under consideration two bills which will establish, for the first time, a U.S. policy towards the development and operation of superports.

The AFL-CIO Maritime Trades Department, which is a constitutional arm of the AFL-CIO composed of 44 unions representing eight million workers in all phases of maritime employment, has long supported the rapid development of deepwater ports on the coasts of the United States.

These ports are sorely needed to improve the safety and economy of importing the increasing amounts of oil and petroleum products the U.S. will require in the future.

The AFL-CIO Maritime Trades Department congratulates the House Merchant Marine Committee and its Chairman, Mrs. Leonor Sullivan, for their foresight in holding hearings on this vital issue. It is imperative that the Committee and the Congress establish as quickly as possible a definite process for building and operating deepwater port terminals.

Unless such a policy is quickly established, the development of a U.S. deepwater port will continue to be retarded by procedural delays and by a lack of clear Government guidance about what is required before a port may be built off the U.S. coasts.

The two bills under consideration by this Committee, H.R. 5091 and H.R. 5898, would both establish a national policy on the certification of superports. However, they differ in the qualifications that must be met to obtain certification.

These bills and the numerous other proposals to deal with deepwater ports that have been introduced this session of Congress highlight the importance of superports and the tremendously complex and wide-ranging issues involved in their approval and construction.

THE NEED FOR DEEPWATER TERMINALS

In the past, the MTD has strongly supported the creation of superports to serve the fuel import needs of the United States. These deepwater ports are a first priority if the present and ever increasing petroleum shortage facing the United States is to be overcome. At the present time, the U. S. is consuming over 17 million barrels of petroleum a day.

It has been variously estimated that by 1985, from 50 percent to as much as 65 percent of U. S. oil consumption will come from foreign sources. Much of this oil will be transported from the far distant Persian Gulf.

While U.S. oil import needs have thus been increasing prodigiously, at the same time the transportation system to bring this oil to the United States has become seriously outmoded.

Today, there are no U. S. East or Gulf coast ports that can handle a tanker larger than 80.000 tons. Oil importers have thus been forced to charter increasing numbers of small 40,000-60,000 ton tankers.

The resulting heavy traffic in U. S. waters by small foreign-flag tankers carrying U. S. oil imports, coupled with U. S. coastwise oil traffic, has created hazardous congestion in U. S. harbors and sealanes leading to conventional oil discharge facilities. The dangers of an accident and spill are magnified by this heavy traffic in smaller tankers serving the United States.

The absence of any U. S. deepwater terminals and the subsequent U. S. dependence on small tankers has also cost the nation heavily in terms of higher fuel costs and greater dangers to the U. S. environment.

Cost to the Consumer.—It costs up to 50 percent more to use smaller tankers to import U. S. oil needs than it would to use larger tankers of 200,000 tons or more. These large tankers would allow U. S. consumers to gain the advantages of the economies of scale "supertankers" produce.

Not only does it cost the consumer more for his oil when it moves on small tankers, but it also increases the dollar drain on the U. S. balance of payments. At the present time, almost all oil imported into the United States is carried aboard non-U. S. flag tankers. Most of these tankers are American-owned runaway flag vessels registered in Liberia or Panama. As a result, the higher costs involved in using smaller tankers means the dollar outflow on the balance of payments increases.

The large deficit in the ocean transportation sector of the U. S. balance of payments is due almost entirely to the small foreign-flag tanker traffic to the U. S. carrying imported oil. In 1970, the tanker outflow alone totaled $393 million. Had this outflow not occurred, the ocean transportation sector would have shown a $332 million surplus.

Safety.—The large numbers of small foreign-flag tankers using U. S. ports have also created a safety and environmental hazard that may already be greater than the dangers of deepwater ports envisioned by the authors of H. R. 5091 and H. R. 5898.

Trade routes along the coasts of the U. S. are severely congested with tankers serving U. S. oil needs. While these tankers are smaller than the supertankers of 200,000 tons or more that now efficiently serve other nations, these foreign vessels are also generally older and less safe than more modern supertankers.

As has been noted, most of these small tankers are foreign-flag vessels, built to standards that are lower than those in the U. S., and they are manned by crews that may not be fully qualified. Last year the Organization for Economic Cooperation and Development (OECD) reported on the hazards of allowing foreign-flag ships, most of them registered under the flags of convenience of Liberia and Panama, to serve the ports of major industrial countries.

The OECD report highlighted accident data for flag of convenience fleets. These nations' fleets carry more than half the oil imported into the U. S. According to the OECD report:

". . . It has often been said that the flag of convenience fleets include a large proportion of low-quality vessels operating under minimum maritime safety conditions. In the period 1950-1970, total loss figures for Liberia were, in proportion to total fleet, twice as high as those for OECD Member countries, for Panama three times as high, and for the Lebanese and Cypriot fleets very much worse. Loss figures are closely related to age and these figures are all the more striking in that the average age for Liberian-registered ships over this period was 8.7 years compared with 12 years for the OECD countries; moreover a large part of Liberian shipping, particularly tankers and bulk carriers, is employed permanently on long hauls and spends relatively little time in congested waters . . ."

Thus, the United States faces a dual safety threat from the current transportation system used to import oil into the U. S. On the one hand the U. S. must fear the increasing congestion by smaller foreign tankers in U. S. coastal waters, with the ever-present danger of oil spills or collisions. And at the same time, the United States must also risk the environmental safety of its shores and beaches on the dubious skills of the crews of runaway flag vessels of Liberia and Panama.

THE ADVANTAGES OF DEEPWATER TERMINALS

The best solution to this situation is to build a number of deepwater terminals along the coasts of the United States.

On the Gulf Coast, the oil refineries of Louisiana provide an excellent reception point for a portion of U. S. crude oil imports. The state of Louisiana fully supports a deepwater port and has established a state body to encourage such ports.

On the East Coast, the need for imported oil is even more pressing. While a number of states have expressed their reservations about the location of a port, the AFL-CIO Maritime Trades Department is convinced that once adequate safeguards and a sound environmental plan are developed for proposed U. S. deepwater terminals, that this opposition will largely disappear.

The West Coast is the only area of the nation that presently has ports deep enough to accept vessels of over 100.000 tons. Yet even there the port capacities are limited; and if large tankers are to serve this area of the nation, then deepwater terminals will be a necessity. Otherwise, the narrow confines of West Coast harbors will severely restrain the ability of supertankers to maneuver or avoid collisions.

Deepwater terminals would produce numerous benefits for the United States. They would allow the introduction of larger tankers to serve U. S. ports, thus allowing economies of scale in U. S. oil trades.

Deepwater ports could be built without the severe ecological destruction associated with dredging and deepening of natural harbors such as New York.

Deepwater ports would halt the flight of U. S. refinery capacity to the Bahamas and other nearby foreign areas. By providing U. S. refineries with a steady flow of competitively priced oil, U. S. refiners would be encouraged to expand their American operations.

The U. S. flag merchant marine would be stimulated by the ability to use larger vessels to serve U. S. oil needs. These larger vessels would be better able to compete more effectively with foreign-flag vessels and could thus increase the U. S. flag merchant marine's share of oil import cargoes, which are presently carried almost exclusively by foreigners. Both U. S. shipbuilding and shipping and, of course, the U. S. economy would be stimulated by the jobs and investment this development would produce.

And finally, a deepwater port could save U. S. consumers 50¢ or more per barrel of oil over the cost of petroleum transshipped through the Bahamas or other halfway points. The balance of payments outflow for oil shipments could thus be significantly reduced.

These and other advantages would all result from the construction of deepwater terminals in the U. S.

H.R. 5091 AND H.R. 5898

Both of these bills will set up specific procedures and methods to follow in obtaining environmental and operational clearance to build deepwater ports.

Both pieces of legislation would allow the Department of Commerce to certify that a plan for a deepwater terminal has met the requirements of law.

The AFL-CIO Maritime Trades Department supports both these goals.

It is imperative that the steps to building a deepwater port be set forth as quickly and clearly as possible. Every day of delay only prolongs the ultimate completion of a deepwater port. Private industry remains reluctant to begin a deepwater port project, with the attendant financial risk, until a deepwater port law is passed.

At the same time, the MTD supports putting the authority to certify U. S. superports in the Commerce Department. We feel that within the Department, the National Oceanographic and Atmospheric Administration has the expertise and staff to accomplish effectively the certification of a deepwater terminal.

We feel that of these two bills, H. R. 5898 is a more reasonable and practical measure. We would urge the Committee to give this legislation its earliest approval, so that further delay in the construction of U. S. superports will not occur.

SUMMARY

H.R. 5898 would provide both the impetus to build superports and the assurance that the nation's coastlines and environment would be protected. We urge the Congress to support this legislation.

Statement of the American Association of Port Authorities, Superport Facilities

Madame Chairman and Members of the Committee: The American Association of Port Authorities consists of those boards, commissions, authorities and similar agencies of local government responsible for public port development throughout the United States. There are some 85 such agencies in the United States responsible for deepwater port development, all of which are AAPA members. Virtually all other ports of this Hemisphere, Latin America and Canada, also maintain AAPA membership for interchange of technical information.

Our United States ports are a highly competitive group, very sensitive to the flow of commerce, and keenly alert to measures which might affect such flow.

The port industry endorses the concept of superport development on a regional basis, provided that such developments are confined to the handling of liquid bulk cargo superships with dimensions, particularly drafts, so excessive that it would be physically and economically impracticable to accommodate them at existing harbors, even if they were improved through a national program to maximum feasible depth. However, we do not see passenger, container, breakbulk general cargo, petroleum "light product" and many lesser dry bulk cargo vessels in this lack of channel depth predicament. Thus, for such categories of ships, we oppose the regional concept as unnecessary and continue to support the Federal harbor improvement programs they may from time to time require.

The port industry therefore, to the extent and for the purposes indicated, supports regional deepwater port development for the handling of liquid bulk cargo supertankers. However, it is essential that all relevant factors be taken into consideration, including the need to safeguard the environment for the "host area," assurance that the benefits from such development are shared down to the consumer level in price and supply and that the ports to be served from any such development derive equitable benefits in a manner that will not cause shifts in their industrial structures, employment or basic economics to the advantage of one area and the disadvantage of one or more other areas.

We note that most of the legislation taking shape goes to the issuance of licenses for the development of offshore port facilities, these to be issued by an appropriate Federal agency. We feel that this concept is basically sound and offers avenues for private and local initiative such as have been traditional with the large scale movements of bulk cargoes. Terminal facilities for bulk purposes are basically links in a processing-distribution cycle. Bulk cargo facilities are generally financed, developed and operated by private enterprise. The additional requirement of Federal licensing will, hopefully, resolve the various complex issues which have surrounded the offshore terminal concept, permitting much-needed development. Such licensing legislation should, in our opinion, meet the basic tests of:

1. Required consultation with affected States, and;
2. Required consultation with affected and interested Federal agencies.

In its endorsement of regional deepwater bulk port development where genuinely needed to meet the problems mentioned above, the port industry opposes any termination, slowdown, suspension or underfunding of existing, authorized Federal navigation construction projects during the course of Federal deepwater port development efforts unless studies establish to the satisfaction of the local interests affected, that regional deepwater bulk port development is necessary in the area involved and will be a timely and viable substitute

Respectfully submitted.

PAUL A. AMUNDSEN,
Executive Director.

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON MERCHANT MARINE AND FISHERIES,
Washington, D.C., July 2, 1973.

Adm. CHESTER R. BENDER,
The Commandant,
U.S. Coast Guard,
Washington, D.C.

DEAR ADMIRAL BENDER: As you may know, the House Committee on Merchant Marine and Fisheries has been engaged in comprehensive hearings on the problem of offshore terminals. This is a very important matter and we have been working in conjunction with at least two other House Committees because of the overlapping of interest.

Our Committee is particularly interested in the operational aspects of these proposed offshore terminals. This raises a number of questions which you might be able to help us with. These offshore terminals may be as much as twenty to twenty-five miles off the coast. The provisions of the Ports and Waterways Safety Act naturally lend themselves to the regulation and operation of these offshore terminals. Could you have Admiral Benkert and your legal staff examine this problem for us and give us an opinion as to whether the provisions of the Ports and Waterways Safety Act as enacted would apply to these offshore terminals, or whether it will be necessary for our legislation to specifically extend the provisions of the Ports and Waterways Safety Act to these terminals some miles out at sea?

In addition, I would appreciate it if your organization could give us a listing of other laws and regulations coming within its purview which might apply to the operation and regulation of these offshore terminals. In the case of these latter laws and regulations, will it be necessary for us in our offshore terminals legislation to also specifically extend the provisions of these laws and regulations to the offshore terminals?

I would appreciate your help in these matters which I have discussed above, and any other matter which your staff thinks might be necessary or helpful with respect to the regulation and operation of offshore terminals. Since we are anxious to move this legislation if possible in the near future, your immediate attention to these issues would be appreciated.

Sincerely,

LEONOR K. (MRS. JOHN B.) SULLIVAN,
Chairman.

DEPARTMENT OF TRANSPORTATION,
U.S. COAST GUARD,
Washington, D.C., July 25, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries, House of Representatives, Washington, D.C.

DEAR MADAM CHAIRMAN: Reference is made to your letter of July 2, 1973, concerning the regulation of the operational aspects of proposed offshore terminals in which you note that the provisions of the Ports and Waterways Safety Act lend themselves to the regulation and operation of these terminals. The question posed by your letter concerns the means by which this and other statutes should be made applicable to these terminals constructed seaward of the territorial sea.

Title I of the Ports and Waterways Safety Act currently applies to the navigable waters of the United States which extend seaward only to include the territorial sea. Since it is most probable that offshore terminals will be constructed as far as 20 miles or more from shore, it will be necessary to extend this statute's application by new legislation to these terminals. Furthermore, as you recognized in your letter, there are additional federal statutes which might apply to offshore terminals. I am enclosing a list of statutes which relate to maritime safety and marine environmental protection in port and near-shore areas. In my view, legislation directed to the comprehensive regulation of offshore terminals should provide for the application of these statutes as well.

It should be recognized that effective regulation of the offshore terminals as ports will require the application of all these statutes, not only to the terminals themselves and activities directly associated with their use and operation, but also consistent with the prevailing international law, to other activities conducted in their vicinity which interfere with or impose a threat to this use and operation. To the extent that any questions may exist as to the application of specific laws and regulations, the effectiveness of the imposition and enforcement of requirements relating to safety and environmental protection will be hampered. Therefore, the legislative jurisdictional statement by which the listed laws are applied to offshore terminals and all activities connected with their use and operation should be clear.

As a final point I should note that determinations should be made in the legislation relating to offshore terminals concerning the application of civil and criminal laws and the creation of civil police authority. As you are aware, state and local legislation control most of the activities in a port and federal legislation, taking this into account, is limited in scope. Therefore, if federal law is to be applicable in an offshore terminal area, the equivalent of these state and local measures must be provided. In this connection, we feel that if adjacent state law is assimilated, the statute should provide a mechanism to maintain the civil law up to date. This is not presently the case with regard to federal enclaves or the Outer Continental Shelf. While the current state criminal laws are assimilated, the civil law is not. This produces anomalous and undesirable results.

I appreciate the opportunity to provide you with our views of this matter. If the Coast Guard can be of any further assistance to you in the consideration of legislation relating to offshore terminals, do not hesitate to call upon us.

Sincerely,

T. R. SARGENT,
Vice Admiral, U.S. Coast Guard, Acting Commandant.

UNITED STATES LAWS WHICH SHOULD APPLY TO OFFSHORE TERMINALS LOCATED SEAWARD OF THE TERRITORIAL SEA

1. All laws of the United States which apply to the high seas
2. With respect to aids to navigation, marking, lights, and signals
    (i) 14 U.S.C. 83
    (ii) 14 U.S.C. 85
    (iii) 14 U.S.C. 86
3. With respect to port security, port safety, pollution control and marine environmental protection
    (i) Title I of Public Law 92–340 (33 U.S.C.A. 1221 et seq.)
    (ii) Title II of the Act of June 15, 1917, as amended (50 U.S.C. 191)
    (iii) Public Law 92–63 (33 U.S.C. 1201 et seq.)
    (iv) The Act of March 4, 1915, as amended (33 U.S.C. 471)
    (v) The Act of September 15, 1922, as amended (33 U.S.C. 472)
    (vi) Sections 311 and 312 of Public Law 92–500 (33 U.S.C.A. 1321 and 1322)
    (vii) Public Law 92–532 (33 U.S.C.A. Chap. 27, 16 U.S.C.A. Chap. 32)
4. With respect to Marine Inspection, the carriage of Dangerous Cargo vessel numbering, merchant seamen, and vessel safety generally
    (i) Title 52 of the Revised Statutes, and statutes amendatory and supplemental thereto, including but not limited to Public Law 92–75 (46 U.S.C. 1451 et seq.)
    (ii) Title 53 of the Revised Statutes, and statutes amendatory and supplemental thereto
5. With respect to load lines
    (i) The Act of March 2, 1929, as amended (46 U.S.C. 85 et seq.)
    (ii) The Act of August 27, 1935, as amended (46 U.S.C. 88 et seq.)

ARNOLD F. KLICK,
Chevy Chase, Md., July 20, 1973.

Hon. LEONOR K. SULLIVAN,
Chairman, Committee on Merchant Marine and Fisheries, U.S. House of Representatives, Washington, D.C.

DEAR CHAIRMAN SULLIVAN: In regard to the offshore and terminal facilities legislation (H.R. 5091 and others) which is currently before your committee, I would like to take this opportunity to present the following observations for your consideration and possible incorporation in the hearing record.

These observations are made as an interested and concerned citizen;

Concerned because we seem to have been offered a "Hobson's choice" by the maritime industry in the requirement for super-ports to meet the energy needs of the nation.

Interested in avoiding a recurrence in the transportation of bulk cargo sometime in the future.

The observations will be focused on H.R. 5898 "A Bill to amend the Merchant Marine Act, 1936, to provide authority to the Secretary of Commerce to issue permits to construct, operate, and maintain certain offshore port and terminal facilities.". This Bill has been selected as the focal point of the observations because of its greater delegation of authority—issuance of permits to construct, operate and maintain—than H.R. 5091. Any other bills which may be before your committee have not been studied. I cannot comment on their relative merit, hence, no significance should be attached to the selection of the focal point other than the one cited.

Not being an expert in transportation economics nor in the environmental aspects of marine activities, I cannot comment on the desirability of "super-ports" as a class nor as individual entities. As an analyst who has labored with the technical aspects of complex analyses for both military and civil agencies, I do feel qualified to comment on the effect of initial conditions or criteria on the conclusions of an analysis. It is in this vein that my observations are addressed.

There are three basic criteria set forth in H.R. 5898, these are:

1. Need.
2. Environmental impact.
3. Availability of alternative sites and methods of construction.

One cannot question the criteria of need, however, the remaining two appear to be sufficiently restrictive to give the impression that the Congressional intent is to limit the realm of the Secretary's consideration. Two important facets which appear to be beyond the realm of these three criteria are:

1. This nation has an enormous investment in port and port related facilities—some 90 ports in 30 different states each of which handled over a million tons of commerce in both 1970 and 1971. The commerce handled by the "super-ports" can only be diverted from these ports. While the commerce at the "super-ports" is restricted to "means of supplying the energy needs of the Nation", this diversion may not be overly damaging, however, when the shippers find a method for handling bulk cargo at such terminals the impact could become acute.

2. The criteria regarding alternative considerations appears to presume that the only alternative to one port is another port. This is correct only in the short run. Ports are only one sector of the ocean transportation industry, ships are another very significant sector. Should not the consideration of alternatives include possible alternatives in that sector, also? For example, the basic concept of ship design has been changed very little since the turn of the century (some even say for centuries)—surely some inventor or engineer has or can devise a better vessel for moving cargo through water. Surely there are concepts or inventions available today which can improve the efficiency of ships, other than following the same basic concept only build them larger.

One such concept that has been around since the early 1960s is the hinged ship. This concept is based on a series of hulls joined by hinges into a continuous, but flexible, hull. The hinged ship concept gains the operating efficiencies of length and size while avoiding much of the vertical stresses of a traditionally designed ship. The hinged ship concept appears to offer many other advantages in shipbuilding, flexibility of operation and in safety yet I have not seen a single reference to an American engineering or scientific investigation of this concept to determine its feasibility or to develop design standards.

If I can pull two such examples together with a limited examination of the legislation there must be more that a serious investigation could reveal. I would like to suggest that you give due consideration to the full ramifications of criteria for granting permits, particularly to the long run possibilities of avoiding another "Hobson's choice". Thank you for this opportunity to present my observations and if this fellow Missourian can be of any assistance please give me a call.

Very truly yours,

ARNOLD F. KLICK.

[Whereupon, at 12:14 p.m., the committee was recessed, to reconvene at 10 a.m., Thursday, July 12, 1973.]

OFFSHORE PORTS AND TERMINALS

THURSDAY, JULY 12, 1973

House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C.

The committee met, pursuant to recess, at 10:05 a.m., in room 1334, Longworth House Office Building, Hon. Leonor K. Sullivan (chairman) presiding.

The Chairman. The committee will come to order.

We are a little handicapped this morning in starting this hearing because the House is going to go into session at 11 o'clock. We shall continue here until the bells ring to call us over for a quorum. Then we will have to, I am afraid, adjourn the meeting and not try to meet this afternoon because when we are under the 5-minute rule in amending a bill, we are not allowed to meet in committee.

I would like to make two statements. Is Mr. Greenberg in the room?

Mr. Greenberg. Yes, I am here, Madam Chairman.

The Chairman. Is Mrs. Barbara Heller here?

Mrs. Heller. Yes, I am present.

The Chairman. We did not get your statements in time, so nobody has been able to read them, and digest them so that we could question you.

We have also had to put Mr. Johnson of the Department of Justice off before, so we are going to start this morning with the Honorable Wallace H. Johnson, Assistant Attorney General for Land and Water Resources, Department of Justice, and then we will get to you, Mr. Greenberg and Mrs. Heller. We may be able to hear only part of your statements. I do not know. We will have to play it by ear from this point.

Are you from out of town, Mr. Greenberg?

Mr. Greenberg. No, I am not.

The Chairman. I know Mrs. Heller is. I may call here first then, so that we can hear her, since she is here from Boston.

With that, Mr. Johnson, would you come up to the witness table, please? We will see if we can get your statement in the record and end with questions for you.

STATEMENT OF HON. WALLACE H. JOHNSON, ASSISTANT ATTORNEY GENERAL FOR THE LAND AND NATURAL RESOURCES DIVISION, DEPARTMENT OF JUSTICE, ACCOMPANIED BY EDWARD S. LAZOWSKA, LEGISLATIVE ASSISTANT; BRUCE RASHKOW, CHIEF, MARINE RESOURCES SECTION; AND MARTIN GREEN, CHIEF, POLLUTION CONTROL SECTION OF THE LAND AND NATURAL RESOURCES DIVISION, DEPARTMENT OF JUSTICE

Mr. JOHNSON. Madam Chairman, committee members, I have several members of my staff with me here today and have asked them to join me at the witness table. Their presence will insure that we have brought the full scope and range of expertise available to the Department of Justice before this committee because of the complexity of the legal issues involved. My associates are Ed Lazowska, who is the legislative assistant in the Land and Natural Resources Division, and Bruce Rashkow, Chief, Marine Resources Section, and Martin Green, Chief, Pollution Control Section, both also of the same Division.

The CHAIRMAN. All right, will you see that the reporter has the correct spellings and titles, and so forth?

Mr. JOHNSON. With your permission, Madam Chairman, when we get to the question portion of this hearing, in order to insure that we have answered all questions completely and fully, if a question is addressed to me, and one of these individuals has the answer that would best serve the committee, I would appreciate it if he could answer the question.

The CHAIRMAN. Fine. Also, your answers could be rather brief, so that when you get the transcript you can fill in on a more fuller explanation for our benefit.

Mr. JOHNSON. Thank you, Madam Chairman.

The Department of Justice is pleased to respond to the request of this committee for testimony on the legal implications of offshore terminal construction and operation, particularly with respect to the Federal or State laws which should be made applicable to such terminals when constructed outside the territorial limits of the United States.

The States have no authority outside of their territorial limits, and the Federal Government has asserted only limited authority on the high seas beyond such limits, (1) with respect to structures related to exploitation of the natural resources of the subsoil and seabed of the Outer Continental Shelf, (2) with respect to the special maritime and territorial jurisdiction of the United States, (3) with respect to ocean dumping, (4) with respect to fisheries, and (5) in instances where it exercises personal jurisdiction over individuals.

By the Outer Continental Shelf Lands Act—act of August 7, 1953, 67 Stat. 462, 43 U.S.C. 1331 et seq. the Congress provided that the Constitution and laws and civil and political jurisdiction of the United States extended to the subsoil and seabed of the Outer Continental Shelf and to all artificial islands and fixed structures erected thereon for the purpose of exploring for, developing, removing, and transporting resources therefrom, as if the Outer Continental Shelf were an area of exclusive Federal jurisdiction located within a State.

To the extent they are applicable, and not inconsistent with Federal laws or regulations, the civil and criminal laws of each adjacent State as of the date of enactment of the act—August 7, 1953—were declared to be the law of the United States for that portion of the subsoil and seabed, and artificial islands and fixed structures erected thereon, which would be within the area of the State if its boundaries were extended seaward to the outer margin of the Outer Continental Shelf.

Thus, there exists for the Outer Continental Shelf a complete set of civil and criminal laws, which are enforceable in the Federal district courts, but these laws are effective as to artificial islands and fixed structures only if erected for the exploitation of natural resources of the subsoil or seabed of the Outer Continental Shelf.

Obviously, then, they would not be applicable to the structures contemplated by H.R. 5091. There are other laws that are relevant to any discussion of legal jurisdiction on the high seas beyond our territorial sea, and I would like to call some of these laws to the attention of the committee.

Section 7 of title 18, United States Code, defines the term "special maritime and territorial jurisdiction of the United States" to include the high seas, any other waters within the admiralty and maritime jurisdiction of the United States and out of the jurisdiction of any particular State, and any vessel belonging in whole or in part to the United States or to any citizen thereof, or to any corporation created by or under the laws of the United States, or of any State, territory, district or possession thereof, when such vessel is within the admiralty and maritime jurisdiction of any particular State.

Various Federal criminal and numerous civil statutes are, by their terms, made applicable within the special maritime jurisdiction of the United States to American vessels beyond our 3-mile territorial sea.

However, as to structures within the purview of H.R. 5091 which are not vessels, some statutory assertion of jurisdiction is needed with respect to criminal and civil laws, as in the Outer Continental Shelf Lands Act.

Another relevant statute is the Marine Protection, Research, and Sanctuaries Act of 1972—act of October 23, 1972, 86 Stat. 1052—which contains prohibitions and limitations on dumping in ocean waters, including the territorial sea and contiguous zone, of materials, other than oil, or sewage from vessels, covered by the Federal Water Pollution Control Act.

Furthermore, the Federal Water Pollution Control Act prohibits discharges of oil from a vessel or onshore or offshore facility into or upon the navigable waters of the United States in harmful quantities, or the waters of the contiguous zone in quantities which threaten the fisheries resources of the contiguous zone, or threaten to pollute or contribute to the pollution of the territory or the territorial sea of the United States—33 U.S.C. 1161. So, these two statutes would be applicable within their limited tenor to operation of facilities pursuant to H.R. 5091.

Another provision which we would like to mention for the record—but which we do not think is necessarily relevant to the present legislation—is 16 U.S.C. 1091 et seq. In this statute the United States has asserted exclusive rights with respect to fisheries in the contiguous zone, which may be loosely defined as the 9-mile zone seaward of the territorial sea.

There are, of course, many statutes of the United States, civil and criminal, which apply to individuals as to whom the Federal Government has personal jurisdiction wherever they may be located. Income tax laws provide an example of both. These are not of concern here. Beyond these, the summary I have given is reasonably complete as to laws which would apply as to structures contemplated by H.R. 5091.

In order to insure the safe and orderly construction and operation of offshore deepwater port facilities, there should be a comprehensive legal system providing the full gamut of civil criminal laws to activities on those structures.

Failure to provide such a legal system for these structures beyond the territorial jurisdiction of the United States would inevitably result in future piecemeal attempts to stretch and apply State and Federal laws which were not originally intended to apply to this novel situation.

In order to avoid the chaos and confusion which would attend such efforts, it is desirable, and probably necessary to establish a comprehensive system.

The administration has recognized the need for the establishment of offshore deepwater port facilities, and the need for new comprehensive legislation to govern their establishment and operation.

In his Energy Message of April 18, 1973, the President proposed the Deepwater Port Facilities Act of 1973. That Act, which has been introduced as H.R. 7501, addresses itself to the same concerns for the integrity of the environment, safety at sea, and balancing competing uses of the sea which are reflected in H.R. 5091 and H.R. 5898.

More importantly, however, the administration's bill provides the comprehensive legal framework which is lacking in H.R. 5091 and H.R. 5898. The administration's bill, like the Outer Continental Shelf Lands Act, generally extends the laws of the United States to the deepwater port facilities; specifically enumerating a number of laws which are deemed to be particularly applicable to such facilities.

For example, under section 111 of the bill, the Ports and Waterways Safety Act of 1972 (Public Law 92–340, 86 Stat. 424) is made applicable to deepwater port facilities. In the absence of the bill, measures designed to ensure the safe operation of American ports would not be applicable to such facilities beyond the territorial sea.

Likewise, the administration's bill would extend the provisions of the Federal Water Pollution Control Act (Public Law 92–500, 86 Stat. 816) to deepwater port facilities beyond 12 miles from our coasts.

As with the Outer Continental Shelf Lands Act, the administration's bill also extends to the deepwater port facilities as Federal law and civil and criminal laws of the adjacent State, where such laws are applicable and not inconsistent with the Act, or with other existing or future Federal laws and regulations.

However, it would apply current State laws, not the 1953 laws made applicable by the existing statute. In addition to ensuring that the full scope of civil and criminal laws will be applicable to activities at the deepwater port facilities, such a system prevents possible conflicts or overlaps of offshore jurisdiction and authority of the Federal Government with the States. Such a system also serves to prevent conflicts or overlaps of regulatory authority among Federal agencies.

Notably in the administration's bill, the Secretary of the Interior is vested with overall responsibility for licensing and regulating such structures.

Apart from the very basic failure of H.R. 5091 and H.R. 5898 to provide any comprehensive legal system to govern activities on the deepwater port facilities, there are a number of other problems with these bills. There is no provision for regulation of a facility, or for suspension or revocation of facility licenses once they are issued.

"Structure," as defined in H.R. 5091, is broad enough to include within its scope of regulation vessels of foreign nations engaged in lawful activity on the high seas. Both customary international law and the Convention on the High Seas, to which the United States is a party (13 U.S.T. pt. 2) recognize freedom of the high seas.

Under section 402(b) a "structure" is defined to mean any "structure, either fixed or floating" which is intended for research "or for any other purpose."

Section 403 provides that no person shall operate such a structure until it has been certified. Therefore, those sections raise the possibility of conflict with the traditional freedom of the seas, such as the freedom of scientific research.

Section 405 of H.R. 5091, empowering the Coast Guard to deal with such structures, raises a similar problem. H.R. 5898, although limited to "ports or terminal facilities," generally, would apply to facilities constructed on any part of the seas beyond our territorial waters by anyone, including foreign nationals on their own seas.

Moreover, the requirement of "all possible precautions" in subsections 403(a) and (b) of H.R. 5091 may create an unnecessarily difficult burden on the applicant for a license to construct and operate a deepwater port facility, and the source of endless litigation by those seeking to prevent the construction of such facility.

Finally, section 407(b) of H.R. 5091 provides that the Attorney General "shall commence" an action at the request of the Secretary of Commerce. This provision represents an encroachment on the traditional and necessary discretion of the Attorney General to evaluate the facts of each case and determine the prospects for the success of such settlement. Traditionally, legislation provides that the Secretary of another agency either refers a case to the Attorney General for action, or requests the Attorney General to bring an action.

In conclusion, it is clear that neither H.R. 5091 nor H.R. 5898 provides the comprehensive legal system which is necessary to ensure the safe efficient establishment and operation of offshore deepwater port facilities and which is provided for under the administration's bill, H.R. 7501.

Thank you, Madam Chairman, I will be happy to answer your questions.

The CHAIRMAN. I want to say that it is possible for this committee to work with the Committee on Interior and with the Committee on Public Works.

We are all having hearings on the very same subject, on different factors possibly of the problem, so that when we come out with a bill, it is our hope to have a bill that is comprehensive.

I have just a few questions to ask.

I know that those who are interested in the State laws will touch on that subject, so I am not going to ask that—but tell me again—how far out does the U.S. territorial jurisdiction, and is that measured from the shoreline?

Mr. JOHNSON. Mr. Rashkow?

Mr. RASHKOW. Perhaps I can answer that. The breadth of the territorial sea right now is 3 miles. Of course, the United States is participating in negotiations for the United Nations Conference to determine perhaps a greater territorial sea.

It is measured from the coastline, which is not specifically the shoreline.

The coastline is defined as the shoreline plus the outer limits of internal waters.

The CHAIRMAN. So it is measured from the edge of the Continental Shelf?

Mr. RASHKOW. No, from the shoreline and the outer limits of internal waters. Internal waters are defined as being rivers, river mouths and bays.

The outer edge of the Shelf is a much greater distance, which only refers to the configuration of the bottom of the seabed, and not to the water above. It is basically the shoreline.

The CHAIRMAN. I think that is confusing to those who are not from the coastal areas, and I am one of them.

So it is from the shoreline itself?

Mr. RASHKOW. Basically the shoreline. There are exceptions with the river mouths and bays.

The CHAIRMAN. I can understand that.

You mention on page 7 that in the absence of a bill, measures designed to ensure the safe operation of American ports would not be applicable to such facilities beyond the territorial sea.

Now, for any law that we pass here extending out into open seas, will foreign countries recognize such a Federal law of the United States?

Mr. JOHNSON. I think we have two levels of perception or analysis here, Madam Chairman.

The first level is the constitution theoretical basis for this committee or Congress to act outside the territorial waters of this country.

The second is the practical application.

Indeed, there are several constitutional grounds for Congress asserting jurisdiction beyond the territorial seas, most of them relating to the commerce authority, and from a practical standponit, foreign nationals and corporations would, in dealing with our country, have to at least impliedly consent to the jurisdiction of our Nation over this area if they choose to engage in commerce with us.

In addition, I believe there are certain international agreements and conventions that Mr. Rashkov can address in greater detail that would apply to the construction and operation of these ports.

The CHAIRMAN. If we do not do something about the negotiations in the Law of the Sea Conference, and so forth, we really will not have a firm right, will we, even no matter what laws we pass here?

Mr. Rashkow. It would be a much firmer right, because this is a novel use of the sea.

However, it has been the judgment of the State Department, and we agree, that under international law we do have a right, as a reasonable use of the high seas, to construct a seaport out there.

The Chairman. We believe that. Would other countries believe it? That is what I am asking.

Mr. Rashkow. It is the State Department's view, and again this is basically their concern, that other countries would recognize this as a reasonable use of the high seas.

There have been other situations perhaps which are analogous, certainly if they erect structures off the coasts of other countries for scientific purposes, that is a reasonable use of the high seas. That is a reasonable use which has been expressly recognized in the Convention on the High Seas, but that Convention did not preclude other uses, not specifically recognized.

The Chairman. With the law being passed in the near future, would this give enough assurance to individuals who are anxious to build these deepwater ports some 20 or 30 miles offshore?

Mr. Johnson. Madam Chairman, I think it is important from a legislative standpoint, as Mr. Rashkov points out, that the reasonableness of our use of the high seas be demonstrated. Indeed, during the course of your hearings you are going to be developing evidence with respect to the reasonable use that we will be making in that regard.

I think it is very important for individuals who will be building the ports to be aware of the basis upon which the Congress has made a judgment as to our authority for acting in those areas.

The Chairman. Is it your judgment that we need to pass this legislation and pass it quickly in order to get started and give assurance to those who wish to build?

Mr. Johnson. Absolutely. Congress must act for a variety of reasons, one of them being the point you make, and the other being that this is clearly an area that is being developed and the Congress should act quickly to ensure that there is a legal system available to govern the use of that area.

The Chairman. Thank you.

Mr. Anderson?

Mr. Anderson. Thank you, Madam Chairman.

Mr. Johnson, you state in your remarks that the States have no authority outside of their territorial limits, and the Federal Government has asserted only limited authority on the high seas beyond such limits.

What legal rights do you feel States should have regarding establishment of offshore ports?

Mr. Johnson. This, of course, is a major policy question, and not necessarily a legal question, but to the extent that this committee addresses that issue, I would suggest there are two considerations that should be taken into account.

One is the impact of the deepwater port facility on the adjacent State to the extent that their economy is affected, their land use planning is affected, their environment is affected; they certainly have a clear and compelling interest.

There must be a very delicate balance struck, in my view, between the overwhelming Federal interest to regulate commerce, and to regulate foreign affairs, and this direct impact on the States.

It seems to me that the way to do this is to assert Federal jurisdiction, and yet, allow the States to play a very real part in the planning process and, in effect, to give them an outright veto over the construction of a deepwater port facility if, in fact, it is contrary to the State's desires and wishes.

Now, there are a couple of ways that you can do that. One is in a fashion consistent with the administrator's bill, where the Secretary of the Interior is called upon to consult with the Governor.

The other is, again, as mentioned in the administration's bill, to allow them to exercise full jurisdiction over the territorial waters.

Of course, in order to get from a deepwater port facility on the Outer Continental Shelf to the mainland you have to pass through State territorial waters.

Mr. ANDERSON. You would construe then that the latter method would be actually an outright veto?

Mr. JOHNSON. From a practical standpoint, I think it would be.

Mr. ANDERSON. Would there be any way that the Federal Government could establish a facility outside the 3-mile limit if the State did not want to give them access or rights to the interior three miles.

Mr. JOHNSON. Again, we come back to the policy question that I raised at the outset.

I believe the Congress could, should you choose to do so.

Mr. ANDERSON. But isn't this issue rather clear in the administration's bill?

Mr. JOHNSON. That is right.

Mr. ANDERSON. In the administration's bill, wouldn't the State, by refusing to grant access across the 3 miles have, in effect, an outright veto?

Mr. JOHNSON. You are right.

Mr. ANDERSON. That is all.

The CHAIRMAN. Mr. Forsythe.

Mr. FORSYTHE. Thank you, Madam Chairman.

Where do we stand with regard to those foreign vessels which will assuredly be a large part of the system of delivering oil to this structure. Will we be able to make them meet U.S. standards?

Mr. JOHNSON. Well, Congressman, I think again you have to look at the practicalities of this. The investment is so great, and the complexities of utilizing these offshore ports are so immense, that there will clearly be agreement between the parties that they will submit to our jurisdiction.

I do not believe from a jurisdictional standpoint there is any way that the United States could, by fiat, assume jurisdiction over foreign vessels that may not be within the specific jurisdiction of the United States.

But again, in the negotiations and the contractual arrangements that will be arrived at for the use of the deepwater port facility and the adjacent areas, there will certainly be regulations governing their submission to our jurisdiction.

Mr. FORSYTHE. Are you saying we could not refuse to accept the berthing of foreign vessels.

Mr. JOHNSON. No, I am saying that indeed, if they wanted to dock at our port they would have to submit to our jurisdiction.

Now, that is a relationship between the ship, the shipowner and the port.

Mr. FORSYTHE. In effect, you are saying if they are going to deal with us they have to meet our standards.

Mr. JOHNSON. It is not a nation-to-nation relationship, and I do not know that it has to be or should be.

Mr. FORSYTHE. Well, we face the serious problem that our standards are far higher than the world is willing to meet. If we do not, in fact, have a statutory basis for maintaining this, we may be in trouble.

Mr. JOHNSON. I would agree with you completely that indeed there should be a statutory premise, authority for the establishment of that standard.

Mr. FORSYTHE. And you now say that that could be?

Mr. JOHNSON. Oh, absolutely.

Mr. FORSYTHE. Thank you very much.

The CHAIRMAN. Mr. Breaux?

Mr. BREAUX. Thank you, Madam Chairman.

Thank you, Mr. Johnson, for your testimony.

I am interested in your discussion on the applicability of the Outer Continental Shelf Lands Act.

Apparently the summary revealed that the act does not apply at all to an artificial island or a monobuoy structure which is not set out in international waters for the purpose of extracting minerals, but is just there as a sort of a pipeline.

Mr. JOHNSON. That is correct.

Mr. BREAUX. So none of them would apply?

Mr. JOHNSON. Well, the Outer Continental Shelf Lands Act would not apply to what I would loosely describe as the subject of these hearings.

They are not structures constructed for the exploitation of our natural resources.

Mr. BREAUX. I think when the State Department testified they said one of the rationalizations and justifications for the United States extending our authority outside of the territorial limits would be the Convention on the High Seas which basically they said concerned a reasonable use of the international waters.

Do you see any problems with that as being the main justification?

Mr. JOHNSON. It is one of the justifications, and in that regard I think it is important for this committee, in framing the legislation to ultimately consider insuring that it is a reasonable use, and to spell out either in congressional findings, or by various standards that are adopted that we are not going to abuse the high seas as it were, from an international standpoint.

Mr. BREAUX. What can we do unilaterally? I think that is a problem in several areas.

Can the Congress say this is a reasonable use of international waters, and make that binding on other countries? I do not think we can.

Can you help me out?

Mr. Johnson. Well, again, I suppose you have got to apply a reasonable standard, starting from the premise that indeed, the Congress has certain authority to legislate with respect to American na- of the basic jurisdictional premises from which you are operating tionals, and obviously, American-flag vessels. That is another one in framing this legislation.

In other words, I do not suggest that indeed, the reasonable use theory of the international law is the only nexus which allows this committee to adopt legislation affecting the Outer Continental Shelf or the high seas.

Mr. Breaux. Okay, let us assume that is one of the reasons we are trying to hang it on.

What other justification is there for us exercising jurisdiction?

Mr. Johnson. Very simple. You are dealing with American citizens.

Mr. Breaux. How about dealing with foreign nationals who are also using that port?

I have no problem with the premise we can regulate American citizens' activities out there, and American shipping interests.

My concern is other than the Convention on the High Seas, or the reasonable use approach, what other legal standpoint can we use to assert our jurisdiction?

Mr. Rashkow. Once again, this is primarily an area in which the State Department would be concerned. Our concerns are primarily related to domestic law.

As a matter of domestic law, you can certainly do it. Whether it conforms to international law is a question on which we usually defer to the State Department.

A number of other justifications, I think, were considered, including the justification that this area could be viewed perhaps as an intricate part of a harbor system, and therefore, we would extend the concept of the road stead. International law recognizes we can do that under certain circumstances.

There are a number of problems in applying that justification, because this is an artificial harbor system rather than a natural harbor system, and the term roadsteads normally assumes a natural harbor system.

Right now, the U.N. Conference on the Law of the Sea has on its agenda the topic of artificial structures, and I gather, although I am not privy to the discussions going on, there are a number of theories on which we could base jurisdiction over these structures.

Mr. Breaux. I am just concerned if we have to wait, artificial superports would be out of style, and will not be feasible any more.

Mr. Rashkow. We do not think we have to wait for that. We think there is a recognizable basis for jurisdiction, and that this is a reasonable use of the high seas.

Mr. Breaux. At what stage do you envision Federal control of the shipment of crude oil to pipelines? We can envision that Federal jurisdiction will take place at the time it leaves the ship to be pumped through the superpor itself, or would you envision it being taken over when it reaches the shoreline and goes into interstate shipment, or at what point?

Mr. Johnson. From a customs standpoint, I think the actual control would begin once it is in the country, at the point of actual entry.

Mr. Breaux. Who would control it from the time it leaves the ship until the time it reaches that point?

Mr. Rashkow. I think the control would be asserted over the product, in this case, oil, upon its entry into the deepwater port facility, because we establish that we can use the seaport for the purpose of receiving supertankers, and having established that, then we have a right to exercise that use, which means we have a right to exercise jurisdiction over it.

From the moment it enters the deepwater port facility the oil would be within our jurisdiction.

Customs law map apply at the point of entry. The customs law provides that there are certain points of entry that take effect, and under the administration's bill it would probably apply when the oil is received, not in the superport, but received on the point onshore.

Mr. Breaux. Of course, if it goes into intrastate pipeline, the Federal Government would not exercise jurisdiction over it at all.

Mr. Rashkow. The administration bill, of course, leaves antitrust lawe as they now exist—if the project violates those antitrust laws, we would not issue a license. If it was expected to violate antitrust laws, the same result would follow.

Mr. Breaux. Thank you.

Thank you, Madam Chairman.

The Chairman. Mr. du Pont?

Mr. du Pont. Thank you, Madam Chairman.

Mr. Johnson, I am interested in the question of taxation.

Am I correct that if a superport were built outside the 3-mile limit, the Federal income tax laws would apply to people working on the artificial island?

Mr. Johnson. So long as they are American nationals, yes, sir.

Mr. du Pont. Would State income tax laws apply to people who were working on a superport inside the 3-mile limit?

Mr. Johnson. Yes.

Mr. du Pont. And would State property taxes be applicable to a superport?

Mr. Johnson. Within the 3-mile limit, yes, sir.

Mr. du Pont. Now, within the 3-mile limit, could a State put a per-barrel tax on the throughput of a superport?

Mr. Rashkow. I believe they could. They have a right to tax.

Under the Submerged Lands Act, the resources of the submerged sea, including the seabed itself belong to the States. This is very similar to the situation under the Submerged Lands Act. So I think a States could probably impose a per-barrel tax on the oil throughput.

Mr. du Pont. Suppose the superport were located outside the 3-mile limit, could they put a per-barrel tax if the pipeline came ashore?

Mr. Rashkow. I think they could do that, since the pipeline would have to go through the State's territorial seas, and certainly, the administration's bill preserves to the State its jurisdiction over pipelines in the territorial sea. So they could probably tax that.

We might have other problems concerning burdens on interstate and foreign commerce, but right now, without detailed analysis. I would say in principle they could tax the oil flowing through those pipelines in their territorial sea.

Mr. du Pont. Well, presumably then if the superport were outside the 3-mile limit off the State's coast, but the pipeline went to the coast of an adjacent State, there would be no taxing right at the initial stage.

In other words, if it was built 4 miles off the Delaware Coast, and the pipeline went into Cape May, N.J., I would assume that Delaware could not tax the throughput.

Mr. Rashkow. I think that is correct.

Mr. du Pont. Well now, I have the language of the administration's bill here, and I do not know who drafted it, but it seems to give something in the first clause, and then take it away in the second clause.

It says, "State taxation laws shall not apply to such facilities * * *"—whatever that means—"* * * but this shall not affect the right of the State to tax its citizens or residents."

Is the corporation a citizen or resident?

Mr. Rashkow. There are two points there. It says shall not tax the facility.

By definition in the bill, the facility must be located beyond the territorial sea.

The facility is, itself, not within the State's jurisdiction.

If the corporation which constructed that facility is a New Jersey Corp., then New Jersey may tax it. If it is a Delaware Corp., Delaware may tax it. If not, they may not tax it.

If the citizens working on that structure are New Jersey citizens, New Jersey may tax them if its laws provide for its citizens making an income out of the State to be taxed.

Does that answer your question?

Mr. du Pont. How do you square this language of your statement a moment ago that you thought that a throughput per-barrel tax could be placed on a facility if the pipeline came through?

Mr. Rashkow. I did not say it could be placed on the facility. I said the tax could be placed on the oil going through a pipeline which goes through the State's territorial sea. That is taxing the oil that is using the pipeline going through the territorial sea.

Mr. du Pont. You do not believe there would be an interstate commerce problem here?

Mr. Rashkow. As I indicated, there possibly might be undue burden upon interstate and foreign commerce, but I do not think a tax is in principle, an undue burden. I think one has to look at the specific tax.

Mr. du Pont. Now, do you see under Federal jurisdiction, assuming we assert Federal jurisdiction on the superport itself, and that i tis built outside the 3-mile limit, do you see any sort of a preemption by the Federal Government in this bill that would prevent the States from regulation of shoreside facilities?

In other words, that umbilical cord that runs from the superport to the shore, is not going to somehow bring Federal jurisdiction with it and prevent the States from regulating shoreside facilities?

Mr. RASHKOW. The only kind of jurisdiction I can see that would remain in the Federal Government would be the formal jurisdiction over interstate and foreign commerce.

This bill does not add any further jurisdiction, it does not preempt anything. It leaves the Federal jurisdiction relating to the territorial sea where it is today.

Mr. DU PONT. Well, I must say that I am a little surprised by your answer to the taxation questions.

Are you fully confident of that answer, or would you like to amplify on that for the record?

Mr. RASHKOW. I would like to amplify, but I am fairly confident of the answer.

Mr. DU PONT. Maybe you would give this full consideration and supply for the committee an answer to this specific question as to whether a per-barrel tax, a throughput tax could be placed on a superport built outside the 3-mile limit, where the pipeline is coming into a State.

Mr. RASHKOW. Now, your question is on the facility itself, or the people who are transporting the oil through and receiving it?

Mr. DU PONT. On the oil.

Mr. RASHKOW. As I indicated, the State could not tax the facility. It could tax the people who are using the pipeline and receive the oil in the State. For example, someone is buying oil, and saying let us deliver oil from the superport into New Jersey.

If it is received in New Jersey, received through pipeline going through the territorial sea off New Jersey, it can be taxed by New Jersey.

Mr. DU PONT. On a per barrel basis?

Mr. RASHKOW. I think the bill allows for that, yes, in principle.

Mr. DU PONT. You keep saying in principle. That suggests in practice it may be different.

In any case, I do not want to take up too much time, but explore that a little bit and get us some further information on that.

The CHAIRMAN. Without objection I think that would be very helpful to explore that in as much depth as possible.

[Further information subsequently furnished:]

If by a per barrel tax on the throughput is meant a per barrel tax on the oil which passes through the pipeline, it is unlikely that such a tax would be constitutional. Article I of the Constitution prohibits a State from imposing taxes directly on imports or exports. Since the Administration's bill does not attempt to increase or diminish the existing jurisdiction of the States to tax in these matters, a per barrel tax on the throughput of the pipeline would likely be viewed as such a prohibited tax on imports. On the other hand, the State could tax operations incident to the importation of the oil from a deepwater port facility in a number of ways. Under the Submerged Lands Act, 67 Stat. 29, 43 U.S.C. 1311, the States are specifically granted title to and ownership of the seabed of the adjacent territorial sea. Consequently, the pipeline which is constructed on that seabed would be subject to the usual annually recurrent property tax. Similarly, oil transported through the pipeline when removed from the pipeline and held for use or manufacture, or in storage, would be subject to such an annually recurrent property tax. Of course, once the oil is at rest in the State and no longer is in the stream of interstate or foreign commerce, it is subject to any normal State tax or control.

As previously indicated, the State could probably subject the pipeline to a property tax. Similarly, the State could probably tax that portion of the throughput of the pipeline which is subject to the usual annually recurrent property tax. Finally, the State could tax the profits of individuals or entities doing business there, whether transporting or processing the oil which flows through the pipeline.

The Chairman. Mr. Studds?

Mr. Studds. Thank you, Madam Chairman.

Mr. Johnson, I would like to pursue a little bit more with you and your colleagues the basis on which you claim that we have the authority to assert our jurisdiction beyond the territorial sea.

At one point this morning you referred to constitutional grounds for congressional assertion of that jurisdiction, and I believe you mentioned the commerce clause.

There is no end to what we might do beyond our territorial limits if one were simply to rely on the commerce clause, I presume.

Mr. Johnson. Again, you have to apply some basic guidlines in determing how far you are going to go.

Mr. Studds. That is precisely what I am trying to get at.

Mr. Johnson. And I suppose that in developing those guidelines as the committee hears testimony there will be a reasonable basis apparent from the record as to just how far we ought to go.

Mr Studds. But the word that keeps recurring obviously is "reasonable" and I assume you have used it from time to time at the criteria by which one determines an assertion of jurisdiction is a justifiable one.

The question is, reasonable to whom? There have been instances in recent history where events have seemed reasonable to us, but not to other nations.

Mr. Rashkow. As far as the constitutional basis for Congress exercising jurisdiction over the deepwater port facilities, the commerce clause is one because it details controls over navigation and commerce.

Another clause, of course, another provision of the Constitution is that the foreign relations are controlled by the Federal Government. This is an area beyond the territory of the United States and of the States. It is an international area, and therefore, is a basis constitutionally for the Federal Government rather than the States to exercise jurisdiction.

Mr. Studds. I am not questioning the Federal versus the States. I am questioning our Government versus the governments of other nations.

Mr. Rashkow. Basically, other nations are not concerned with our commerce clause.

Mr. Studds. I would think that is an understatement.

Mr. Rashkow. They are concerned with their rights to use these high seas, and as we have indicated the primary basis for our assertion of this jurisdiction is the reasonable use.

Mr. Studds. Okay, reasonable.

The Outer Continental Shelf Lands Act, which became law in 1953, at that time did that constitute unilateral action by the United States?

Mr. Rashkow. Yes, it did.

Mr. Studds. It did?

Mr. Rashkow. Yes, it did.

Mr. Studds. That presumably struck us as reasonable in 1953 to claim that kind of jurisdiction over all the resources of the seabed.

Mr. Rashkow. In principle, it struck us as reasonable, but the United States gave four justifications which defined what reasonable meant.

Mr. Studds. Did it strike other nations as reasonable at the time, that we should claim all of those goodies for ourselves?

Mr. Rashkow. Yes, it did, and many other nations emulated it.

Mr. Studds. But it preceded that Convention of 1958?

Mr. Rashkow. Yes, it did.

Mr. Studds. I apologize to this committee for again and again and again bringing up the same point, but I am intrigued by what seem to me inconsistencies in the position of the administration as to when you are prepared to recommend unilateral action in international waters and when you are not.

Now, the subject of deepwater ports is on the agenda of the Law of the Sea Conference, is that correct?

Mr. Rashkow. Not specifically deepwater ports, as far as I know.

To my knowledge, what is on the agenda is the jurisdiction over offshore structures unrelated to the natural resources.

Mr. Studds. Which would certainly include a superport. It is agenda item 18, I think.

If I understand the position of the administration in this instance with respect to deepwater ports, you are urging that we act unilaterally prior to the conclusion of that Conference with respect to an item that is on the agenda of that Conference.

Mr. Rashkow. This is again primarily a concern of the State Department.

It is my understanding that when they speak of unilateral, they speak of unilaterally doing something which is perhaps unrecognized, for example, making a change in the international law unilaterally, or asserting something that has met resistance internationally unilaterally.

Mr. Studds. I am not particularly impressed with the State Department's respect for international law from time to time.

What I am trying to get at is another subject with which this committee is concerned, and that is the question of fisheries.

Many of us have urged, i fthat is a strong enough word, that this Nation assert its fisheries jurisdiction out to 200 miles. That, too, is an item on the agenda of the Law of the Sea Conference.

We are told by the administration, Justice, Interior, and others, that that is unthinkable, because that constitutes interim, unilateral action by the United States on a subject that is on the agenda of the Conference.

We are told with respect to deepwater ports that that is quite thinkable, in fact, it is imperative. What is the difference?

Mr. Rashkow. Again, this is primarily a State Department matter, but I think primarily international law clearly prohibits the exercise of rights over fisheries beyond the territorial sea. That is the Convention on the High Seas of which we are a party.

Mr. Studds. Which international law prohibits that?

Mr. Rashkow. The Convention on the High Seas says the freedom of the high seas, including fisheries, shall be recognized by all states beyond the territorial seas.

Mr. Studds. That is not true. We exercise fishery control jurisdiction in the contiguous zone.

Mr. Rashkow. This has been a development in the international law.

Mr. Studds. You mean we did it, and therefore it became customary international law?

Mr. Rashkow. We did it in 1964. The State Department position was that under the custom and international law of the time that we could do that.

Mr. Studds. Enough other people had done this, so we might as well do it to protect our own people.

Mr. Rashkow. There is a prohibition in international law against exercising jurisdiction beyond the territorial seas for fisheries purposes.

Mr. Studds. I would like to see that specific citation. In all the dialogue we have had with the State Department they have never made that contention with us. They make the argument that it would jeopardize our position at the Conference to act unilaterally on an item on the agenda.

But the State Department has not made that argument at all, and I know it is not your field, but again and again and again we are told here is an area that we have to act. It is on the agenda. It is in international waters. We have to act, because it is in the interest of this Nation.

For some reason, the interests of the Nation is interpreted differently when it is oil at stake than when it is the fishermen at stake. And that is a point I want to bring out as often as I can.

Thank you very much, Madam Chairman.

The Chairman. Mr. Clark and Mr. Murphy have come in, but unless they have some extremely important questions to ask we will dismiss the witnesses. What we would like to do is to pose questions to you in writing, so that when you get your transcript, you can answer.

Mr. Johnson. We will be happy to answer any questions.

The Chairman. Only because we are pressed for time this morning.

I do appreciate your coming, and I think we still have many questions left unanswered. I am going to call at this time Mrs. Barbara Heller, representing the Environmental Policy Center.

Mrs. Heller, should the bells ring, that will stop us, but we will send written questions to you, and you can answer them when you get your transcript.

STATEMENT OF BARBARA HELLER, REPRESENTING THE ENVIRONMENTAL POLICY CENTER

Mrs. Heller. I will be glad to answer any questions at any time that the committee sends them.

We appreciate your taking us out of order, since I do come from out of town.

We appreciate the invitation to appear here today to testify on the question of deepwater port development. We seem to be on the horns of a dilemma with regard to any oil-related development these days, with industry and many Government officials screaming "energy crisis" on the one hand, and on the other, more Government officials and private groups trying to preserve our rapidly deteriorating environment and to enforce and protect what environmental laws now exist.

This situation is unfortunate and unnecessary, for with some thoughtful planning and enforcement we can fulfill both our energy needs and our high goals for environmental quality. Hopefully, this committee and others considering deepwater port development will play an important role in this planning process.

Superport development is part of two major areas of emerging policy development: energy policy and coastal zone management. As part of the overall energy problem, means of enabling the United States to bring oil in as safely and reliably as possible should be seen as one step toward development of a national energy policy. We feel that this policy must include ways of limiting our growth in energy demand.

President Nixon, in his energy message, spoke of the national necessity of developing an "energy conservation ethic." Unfortunately he proposed little in the way of concrete action, preferring to make energy conservation and efficiency voluntary.

The Office of Emergency Preparedness study, the "Potential for Energy Conservation", suggested energy conservation measures which would:

> Reduce currently estimated energy demand in 1980 by as much as the equivalent of 7.3 million barrels per day of oil at an estimated annual value of $10.7 billion, (this estimate is to be compared with projected 1980 oil imports of 9.2–11.6 million barrels per day).

Legislation introduced in Congress this year recognizes this possibility, and takes steps toward reducing demand. Energy conservation does not fall strictly within the purview of this committee, but we hope that you, as individual members of Congress, and as members of a committee considering an integral part of energy policy, will act to begin the energy conservation ethic which President Nixon spoke of.

Despite much talk in recent months, we still have hardly begun to develop a coherent national energy policy. We have environmental impact statements on various energy development proposals, and an administration which apparently wants to exploit all our domestic resources as fast as possible, but no agency, institution, or person has taken a total look at our energy problems.

We desperately need that look. We need to know how much energy we will require for the foreseeable future, taking into consideration possible energy efficiency and conservation measures. We need to know the comparative costs and benefits, including environmental costs and benefits, of developing each of the energy sources available, including such resources as deep-minable coal, as well as possible future sources, like solar and fusion power. The tradeoffs between development of these various resources should be studied in relation to our needs.

We should know, for example, whether oil shale development, the trans-Alaskan pipeline, or new offshore development is most costly, from both economic and environmental viewpoints. We need to know whether it makes more sense to develop our diminishing resources now, or to establish national energy reserves and import our oil as long as the world political and financial situation will permit.

These are all questions which must be answered in order to develop a rational energy policy, and indeed, if we are to approach the individual parts of an energy policy, such as deepwater port development, in a responsible manner.

As with energy policy, coastal zone management must be viewed as a whole, not by individual projects. We face new Outer Continental Shelf development, oil port development, refinery proposals, offshore nuclear power stations, potential commercial sand and gravel operations, and numerous other coastal development proposals. If all the various industrial goals for our coastal waters should become reality, we will not have much of coastal zone to manage.

Numerous proposals for deepwater ports, refineries, and other industrial facilities have been advanced, many of them products of grossly inadequate engineering and economic planning.

In Massachusetts last fall we were presented with a proposal by the Massusetts Port Authority which, from both economic and environmental viewpoints, was a masterpiece of poor planning. It involved an oil product terminal, a tank farm, a crude terminal, and refineries, and associated pipelines and other facilities. Parts of these were to be built on two of the last remaining marshes in the region.

The project's economic justification was practically nonexistent. It was attacked by both private and governmental sources, and, privately, by representatives of the oil industry. It is this type of unilateral proposal, made without any public involvement, which must be prevented.

It should be clear that before we proceed with mort and more proposals, more permits, more local opposition, the basic question of whether, in fact, the need for deepwater port facilities exists should be answered; and if and when it has been established that there is such a need, a mechanism for determining the most environmentally and economically sound location for a facility should be developed.

Overall planning and coordination should be accomplished by one Federal agency or an interagency task force. That agency should, in addition, to strict licensing responsibilities, have authority to control port systems, and should work closely with the Coast Guard to regulate vessel design of tankers using U.S. port facilities. The agency should also be required to evaluate and regulate any secondary impacts which might occur as a result of deepwater port development.

One issue which is sure to prove controversial is that of State and regional participation in selection and approval of facilities. We believe that States should have approval authority on the basis of land use, environmental impact, and coastal zone management.

Congress passed the Coastal Zone Act in 1972, encouraging States to develop coastal zone management programs. Why give the States money and a mandate to develop coastal zone plans, and then dictate to them that a particular development should be part of that plan?

A State should have the prerogative of disapproving a facility which is not in keeping with its coastal zone policy.

You have heard from industry representatives of the many benefits which may result from deepwater port development. The remainder of our testimony will examine some of the environmental impacts associated with deepwater facilities, and the many issues and questions which remain unresolved.

The environmental impacts may be generally divided into three categories: Impacts from construction, from operation, and secondary effects. We will consider the two kinds of facilities which seem most likely to be part of deepwater port development in the United States, the single point mooring system (SPM) and the artificial island.

The SPM is a monobuoy anchored to the ocean bottom with attached flexible hoses leading to a pipeline. A fixed island would be semipermanently attached to the ocean bottom, would require tug assistance for docking supertankers, and could include breakwaters, storage tanks, and dock space for shuttle vessels, in addition to pumping equipment. Transshipment could be by pipeline, shuttle vessels, or a tug-barge system, or a combination of these. We are assuming that the facility would be constructed offshore.

IMACTS FROM CONSTRUCTION

Depending on the distance from shore, some dredging might be necessary to accommodate the deep drafts of modern supertankers. Dredging operations would be highly detrimental to local fisheries. Although effects of long-term offshore dredging have not been well studied, some serious effects are acknowledge. It is known, for example, that the acute turbidity caused by dredging operations is fatal to lobster and other larvae.

If a SPM buoy was located far enough offshore for deep draft tankers to anchor, no dredging would be necessary.

A solid offshore structure like a fixed island would affect water movement, and could alter wave action, water circulation, and prevailing current. Although it is not well understood just how a circulation pattern could be altered, it is known that changes in circulation would affect the shoreline surf, and loss of wave action could significantly alter the movement of sand to and from the beach, possibly resulting in serious beach erosion.

In addition, changes in water flow in partially enclosed bays could alter the salinity of a bay's water, and at the same time, decrease the flushing action and the rate at which pollutants are removed to the ocean.

It is interesting to note that Milford Haven, a very large superport in Wales, has a maximum tide of 26 feet, and massive flushing action. Thus, any pollution which does occur is flushed out to sea.

The filling required for construction of an offshore island could cover any benthic organisms in the area, and so could destroy the value of an area if it is important for shellfish. If the material used for the fill is dredged offshore, the problem is compounded.

OPERATION IMPACTS

Operational impacts can be divided into four subcategories: Those resulting from pipelines, from tanker operations, from transfer operations, and control and cleanup if an accident occurs.

1. PIPELINES

According to the Maritime Administration's environmental impact statement on the tanker construction program, pipelines which are laid along the bottom are "more susceptible to damage from physical contacts and currents, and have a higher chance of breaks and ruptures with consequent spills. They may also obstruct water circulation, especially in relatively shallow areas near shore."

In addition, they may be obstructive to some kinds of fishing operations. While the construction of buried pipelines will cause a temporary disturbance on benthos, burying pipelines is clearly preferable environmentally to pipelines on the sea floor. We believe that if and when deepwater port facilities are constructed, all transfer operations should be by pipeline, and all pipelines should be buried.

2. TANKER OPERATIONS

The MARAD impact statement states that "of the 1,457 million tons of oil lost per year which tankers and tank barges are held accountable for, 967,000 metric tons come from routine tanker operations and ballasting and cleaning of cargo oil tanks."

Most newly constructed supertankers have the load-on-top system for cleaning ballast tanks. LOT effectiveness depends greatly on sea conditions—in rough weather oil and water will not separate effectively—on length of ballast voyage—if voyage is short, time is insufficient to separate oil and water and complete the required pumping—and on oil-water interface detectors for which the technology is not adequate to the task.

Furthermore, LOT cannot be applied to tankers in product trade, because the various refined products cannot be mixed, even in the small amounts which would occur with the LOT system.

Thus, we believe that LOT is a stop-gap measure, only partially effective, and that segregated ballast systems should be required on all tankers which would use our port facilities, as the Coast Guard has proposed—Federal Register Vol. 38, No. 17.

Whichever central agency does wield authority for licensing deepwater port facilities should work closely with the Coast Guard in establishing standards for tankers entering U.S. waters. Additionally, the most modern ballast treatment facilities should be installed.

3. TRANSFER OPERATIONS

Approximately 70,000 metric tons of oil per year are injected into the seas as a result of cargo handling operations between tankers and marine terminals. Although the amount is relatively small, these spills occur frequently in the same areas. Human error is the predominant cause of these spills, although mechanical and design faults are also contributing factors. Close supervision of transfer operations, and better crew training procedures would help alleviate this problem.

As we said earlier, we believe that pipelines are the best system for transferring oil to shoreside facilities. Smaller tankers and barges which could be used instead would add to port traffic congestion, and might require additional waterfront facilities. Traffic problems are significant. Many U.S. channels are extremely narrow, and increased numbers of small tankers (which would be in the 35,000–85,000 DWT range) would increase the likelihood of polluting incidents.

4. OIL SPILL CONTROL AND CLEINUP

Oil spill cleanup and control technologies are still grossly inadequate to the task. The MIT-Sea Grant study on the potential impacts of an oil find on Georges Bank states that "maximum sea state ability of present booms is about five feet. It seems unlikely that higher sea state booms will be developed." Booms now manufactured cannot contain oil in currents over two knots.

The study also says that "attempts to provide an oil containment and collection system against winter spills on Georges Bank are presently futile, and almost certainly will remain so." This problem raises serious question about the ability to control oil spills at potential deepwater port facilities, particularly off the northeast Atlanic coast. Site evaluation for porticular proposals should carefully consider the difficulty of cleanup in certain areas.

Any offshore facility should have the latest technology for containment, which ought to include containment equipment in place surrounding the site of normal loading and unloading so that immediate containment and removal of any oil spilled can take place. Such systems should be an integral part of port design.

The problem of cleanup is equally as serious as that of containment. Despite our vast inventory of chemical agents, including sorbents, sinking agents, burning agents, and dispersants; in most cases chopped straw is still the best method of cleaning up spilled oil.

Following the *Torrey Canyon* disaster most of the damage in the intertidal zone and shallow water was caused by the highly toxic detergents used to disperse the oil. Although some progress has been made in developing less toxic dispersants, the fact remains that this method of cleanup is toxic, and in the long run may be quite harmful. Dispersants are commonly used in Europe to cope with oil pollution problems. Their use has been discouraged, however, and justifiably, in our view, in the United States.

All possible efforts must be made to protect bays, lagoons, and estuaries which are crucial to the fisheries. If a spill occurs offshore and heads in toward land, inlets which approach such ecologically sensitive areas should be sealed off either by mechanical or pneumatic barriers. At present no such inlet protection system exists in this country.

Once a spill occurs offshore, we can try to contain and remove it, but our technology is such that some damage will be done, however quick and well-intentioned are the actions which follow. As any good doctor—and, indeed, any good oil man—will tell you, the best medicine is prevention. Prevention requires the most stringent standards for tanker construction, strict training and licensing of tanker personnel and the mandatory, modern traffic controls systems, as well as strict licensing, inspection, and enforcement procedures for offshore facilities, if and when they are necessary.

Whenever a decision has to be made, certain tradeoffs must be realized and accounted for. Construction of deepwater oil facilities involves numerous complicated tradeoffs. One of the most serious involves possible conflicts between oil-related development and other users of the ocean environment.

The Maritime Administration's environmental impact statement on the tanker construction program analyzes the possible impacts of a major oil spill on the commercial fisheries and coastal recreational industries: the Louisiana shrimp industry is valued at about $100 million annually, and the loss of an oyster crop for 1 year would represent a loss of about $10 million.

Although the value of the recreational fishery and tourism is not known, MARAD estimates that it is probably larger than the value of the commercial fishery. After a massive spill in Machias Bay, Maine, damage to the fisheries could be as much as $20 million, with a processed value of about $48 million.

Additionally, an entire tourist season could conceivably be lost "with serious economic loss to coastal New England communities." Considering these potential impacts, and the fact that the east coast fisheries are in serious trouble from overfishing and from foreign fishing fleets, we believe that the commercial fisheries need the best possible protection from potential damage from oil pollution.

Although oil is extremely important to our energy needs, we have heard a lot of bluster and rhetoric about the "energy crisis." The oil industry is quick to point out its financial troubles and the extent to which it must go to meet some of our environmental safeguards.

Yet few will point out the potential loss to other industries which may result from the lack of these safeguards. Oil is a nonrenewable resource, which will not last forever. When it is gone we will have to find other means of satisfying our insatiable energy demands.

This certainly argues for extreme caution in development, and for the safest, least wasteful ways to transport, refine, and distribute oil.

Fish, on the other hand, are a valuable, renewable resource, which much of the world relies on for most of its protein. We would be foolish, indeed, to allow our thirst for oil to destroy our fisheries. We do have the means for preventing oil pollution, and thus preventing the risk to t he fisheries. What we must do is commit ourselves to the idea that we will control the fate of our seas, that we will not permit the seas to be exploited by whoever so desires.

Secondary effects: Among the most serious secondary effects of construction of offshore facilities is the resulting onshore development, which may include refineries, petrochemical plants, tank farms, and ship repair docks. Refineries and petrochemical plants contribute about 300,000 metric tons of oil to the marine environment each year.

In addition, refinery development involves large land areas, air and water pollution, and waste disposal problems. It should be noted that refineries associated with deepwater port facilities need not be located on the coast, but may be farther inland.

The question often arises of whether new industrial facilities should be constructed in areas which have already been developed, or in relatively undisturbed places. An economist would talk about marginal damage, citing less marginal damage in areas which are already developed.

If the area of a new deepwater port is already heavily developed, new growth may lead to congestion, which places severe strains on existing utilities and services. This may still result in marginally less damage than building entirely new facilities in a new area.

Such analysis is not, needless to say, very comforting to people in those already industrialized areas who will have to tolerate that much more noise, air pollution, water pollution, and other unpleasant refinery effects.

On the other hand, building entirely new modern facilities in a previously undeveloped area may result in lower overall quantity of emitted pollutants. Again we face the question of tradeoffs.

Ultimately, we believe the people in the area should decide whether or not they wish to have such facility. As we said earlier, it does not make much sense to give a State a mandate to develop a coastal zone policy, and then dictate part of that policy to the State.

In addition to refinery problems, an area will be faced with the need for space and structures for oil storage. Carefully planned development should take this into account. The Massachussetts Port Authority's proposal suggested that storage tanks be built on the last remaining marsh in the greater Boston region (incidentally, at the end of a runway, under a flight path of Logan Airport), and that the refinery in the original proposal be built on the other remaining marsh between Boston and Cape Ann. This mode of planning, or lack of planning, with no respect for ecological or overall environmental and public safety considerations, or for community interests will not be tolerated by the public, nor, hopefully, by our elected representatives.

Sites for deepwater port facilities will have to be evaluated on a case-by-case basis for their environmental and economic impacts. A deepwater port-refinery-storage complex in New England would very likely change the entire economic base of the region, not to mention its overall character and environmental quality. Information needed to analyze the impact of an offshore terminal depends on what type of structure is anticipated, as well as on the physical characteristics of the proposed location.

Environmentalists are often asked if we feel like we are fighting brush fires while the forest is burning around us. Often the answer must be yes. We may put out a brush fire or two, but someone can always light the match that will consume the forest. Once it is gone we can do nothing.

The National Oceanic and Atmospheric Administration's survey ships have given us an indication of how far gone our oceans are. It was estimated from these surveys that oil contamination

> "covered 50 percent (80,000 square miles) of the survey area along the East Coast Continental Shelf; 80 percent (280,000 square miles) of the sur-

vey area in the Caribbean to the Gulf of Mexico; and 90 percent (360,000 square miles) of the survey area north of the Antillean Chain, extending roughly 500 miles north and south of the coasts of the Bahamas and the West Indies.

The total surface area in which oil contamination was detected amounted to 665,000 square miles of open ocean.

By taking the proper steps now to assure that if and when offshore development occurs it is safe, we can help stem the tide of deterioration of the seas.

Thank you.

The CHAIRMAN. I think you have contributed an excellent paper. I think you have put a lot of knowledge and time in making your presentation, and we appreciate it, and we are sorry that conditions do not allow for questions right now.

Mr. Greenberg, since you are in Washington, we will have to schedule another time for you. I appreciate your coming. The committee will recess subject to the call of the Chair.

[The following was supplied for inclusion in the printed record:]

STATEMENT OF ELDON V. C. GREENBERG ON BEHALF OF SIERRA CLUB, ENVIRONMENTAL DEFENSE FUND, NATURAL RESOURCES DEFENSE COUNCIL, NATIONAL PARKS AND CONSERVATION ASSOCIATION, AND FRIENDS OF THE EARTH

SUMMARY OF POSITIONS

The basic positions set forth in the testimony are as follows:

(1) Offshore development of deepwater ports should not be permitted to proceed (a) until fundamental questions of need and environmental effects are resolved and (b) until a coordinated policy approach to development of the coastal zone is established;

(2) Any deepwater port development which is undertaken should proceed cautiously and perhaps be limited to a pilot project in the first instance;

(3) Since only a limited number of deepwater port facilities appear ripe for consideration within the near term, it may be appropriate to have specific *legislative* approval for each facility, rather than leaving this determination to an agency;

(4) There should be overall planning and coordination, through a single federal agency, of deepwater port development;

(5) State and regional authorities should be involved in the planning process and any deepwater port project should be subject to their approval on land use planning and environmental grounds;

(6) There should be a uniform scheme of regulation of deepwater port development applicable to such development whether it occurs within the territorial sea or on the Outer Continental Shelf;

(7) Financing, ownership and charges for use of deepwater port facilities should be subject to governmental regulation;

(8) Authority to regulate vessel design and provide for vessel traffic services and port systems should be extended to deepwater port facilities constructed outside the territorial sea;

(9) Deepwater port facilities should be located and isolated off shore and at a substantial distance from bays and estuaries; and

(10) Transport of oil from offshore terminals must be accomplished by buried pipelines rather than small tankers and barges.

STATEMENT

I appreciate the invitation to appear before the Committee today to provide the advice of the Sierra Club, the Environmental Defense Fund ("EDF"), the Natural Resources Defense Council ("NRDC"), the National Parks and Conservation Association ("NPCA"), and Friends of the Earth ("FOE") with respect to proposed deepwater port legislation.[1] I have acted as counsel to these groups on environmental matters in the past, and have been asked by them to coordinate the presentation to this Committee today of their views on the important issues of national environmental policy raised by deepwater port development. At the request of the Committee, I will focus in this testimony on general problems related to such development rather than on any spcific proposal currently pending in Congress. I might add, at the outset, that I am hopeful that the analysis in and comments on the environmental impact statement which has just been issued by the Department of Interior with regard to the Administration's proposed legislation will help resolve some of the issues and problems which I outline in the substance of this testimony.

The environmental groups which I represent are all national, non-profit, membership organizations deeply concerned about the preservation and protection of the marine and coastal environment. Their combined membership exceeds 250,000 persons throughout the United States and abroad, and includes a substantial number of persons who reside in coastal areas which are likely to be directly affected by offshore development, as well as scientists who have conducted and intend to continue to engage in research in coastal and estuarine areas and the marine environment.

The environmental groups have made substantial efforts to improve the quality of the marine and coastal environments by means of litigation, testimony, policy analysis, and educational programs. For example, in the litigation field, EDF, NRDC and NPCA recently achieved a settlement with the Commerce Department under which it agreed to prepare environmental impact statements in connection with its program to subsidize the construction of United States oil tankers. And NRDC, the Sierra Club and FOE were successful in requiring the Department of Interior to consider all reasonable alternatives, and their environmental impacts, to its offshore oil and gas lease sales. In the area of international regulation of marine pollution, EDF, NRDC and the Sierra Club have taken an active role in commenting upon the proposed 1973 Convention for the Prevention of Pollution from Ships. These groups have also been actively involved in presentation of testimony on this subject. Thus, all the groups presented their views on deepwater port policy at hearings held in March of this year before the Senate Commerce Committee, and the Sierra Club submitted comments at congressional hearings held in 1970 regarding the development of a proposed deepwater port at Machiasport, Maine, as well as at recent hearings held around the country by the Corps of Engineers related to its current deepwater port studies.

I. THE PROBLEM OF DEEPWATER PORT DEVELOPMENT

The United States is on the verge of deciding whether to develop deepwater port capacity. As the Committee knows, this country, which is situated on a relatively shallow continental shelf, currently has no harbors which are deep enough to accommodate so-called "supertankers"—ships of 200,000 dead weight tons or greater, with drafts of more than 60 feet and capable of carrying in excess of 60 million gallons of oil. Thus, unless existing ports are deepened or new facilities constructed in deeper water offshore, supertankers—whose number in the world fleet has grown spectacularly from two in 1967 to in excess of 230 today, with more than 250 on order—will never come fully loaded to the United States. Not surprisingly, in light of the immense investment of the oil industry in supertankers, and stimulated by fears of an "energy crisis", pressure for deepwater port development in this country is mounting. As you undoubtedly are aware, concrete industry plans currently exist and are rapidly progressing (although shrouded in substantial controversy) for development of such facilities off the Maine, New Jersey, Delaware, Louisiana and Texas coasts. Indeed, creation of U.S. deepwater port capacity is taking on an aura of inevitability, even though, as pointed out below, the ultimate rationale for and implications of such development are uncertain.

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[1] Substantial assistance in preparation of this written testimony was provided by my colleague at the Center for Law and Social Policy, Robert M. Hillman, and by Edward L. Strohbehn, Jr. of NRDC and Peter Borrelli of Sierra Club.

The principal reasons advanced in support of deepwater port development are the projected growth in U.S. demand for imported oil over the next 10-15 years, the unit transport savings supposedly associated with carriage of oil in supertankers, and the alleged environmental benefits relating to the use of supertankers and offshore (though not inshore) facilities. Thus, at the heart of any proposal to develop deepwater ports lie the threshold issues of: (1) whether the United States needs additional energy supplies of the magnitude contemplated, particularly in the form of imported petroleum—which depends in large measure on the shape of our national energy policies; (2) whether, if substantial increases in petroleum imports are necessary, the use of deepwater ports in providing for reception of such imports is economically justifiable; and (3) whether, if deepwater ports are economically justifiable, their development is environmentally acceptable in light of existing or potential alternatives. Despite the numerous preliminary studies that have been recently undertaken, including those of the Maritime Administration, the Corps of Engineers, and the Council on Environmental Quality, none of these issues has been comprehensively addressed or adequately resolved to date, and thus critical areas of uncertainty remain.

A. Demand for Oil Imports

In terms of energy policy, the need for deepwater port development is premised on vast increases in oil imports—at least during the next 10 to 15 years. The Federal Maritime Administration has estimated, for example, that approximately 300 tankers, including more than 125 supertankers, or their equivalent tonnage, will be needed to carry such imports by 1980 alone.

These projections, however, as well as the extent of our reliance on oil imports over the long term, are subject to debate and depend upon what energy policy strategies are assumed. The United States has long lived with the illusion that it can utilize ever increasing amounts of energy without regard to future energy requirements or the environmental degradation which can and does result from such unrestricted consumption. To urge, without adequate reflection, the creation of deepwater ports to handle an increasing volume of oil imports may merely serve to perpetuate this illusion and defer but not resolve the problems of energy utilization which we face today.

President Nixon has recently stated that "the American people must develop an energy conservation ethic." The most effective way to foster such an ethic is not to encourage ever greater investment in energy production and distribution, but to develop sound, hardnosed strategies to reduce energy demand. Such strategies can be implemented now or in the near future and could substantially reduce the need for increased oil imports. For example, demand for motor gasoline and jet fuel, which comprise over 80% of the petroleum demand in the transportation sector, can be substantially decreased through energy conservation efforts. Demand for the former can be cut by reducing the size, weight and engine horsepower of automobiles; and, demand for the latter can be decreased by increasing the airline industry's load factor through reduction of duplicative flight schedules.

Moreover, alternative energy strategies are even more likely to reduce reliance on imported oil in the long term. These strategies include, in addition to conservation measures, increasing the availability of other energy resources, such as deep-mined low sulphur coal and gas and oil from such coal and/or exploration for and production of oil and gas in the North American continent. To the extent these strategies are implemented, demand for expanded marine transport capability may be relatively short-lived.

Finally, the relative environmental costs and benefits of alternative energy development strategies, i.e., oil importation versus offshore exploitation, must be carefully weighed—a task which has not yet been adequately done—before a commitment to any one strategy is made. The point is that national long-term energy requirements and methods for meeting them are critical factors in deciding whether and if so how to develop deepwater port facilities in the United States, particularly in light of the severe environmental risks which they pose.

B. Transport Cost Savings of Supertankers

Even if needs for oil imports rise substantially, it is not clear that deepwater ports make economic sense. Development of deepwater ports is deemed desirable because of unit transport cost savings projected to result from carriage of oil in supertankers over long distances. It is estimated, for example, that dollar per ton freight cost could be reduced nearly 30% by increasing tanker size from 65,000 to 250,000 DWT. However, whether these apparent reductions in unit transport costs will result in significant economic benefits for the consumer (as opposed to increased industry profits) is not clear. As a recent report of the Senate Commerce Committee concluded:

"Seaborne transportation accounts for only a tiny part of the final price to the consumer. Even the peak rates prevailing in early 1971 amounted only to 1 cent per gallon of gasoline levied by government. Since seaborne transportation costs account for so small a proportion of oil cost, even large percentage escalations of that cost would have very little impact on consumer prices." S. Rep. No. 92–724 (March 28, 1972).

In any event, whether deepwater port development in the United States is economically justified cannot be dtermined solely by looking at unit transport cost savings. Several other costs associated with a delivery system must be taken into account, including (1) the costs of constructing new ports, which could range as high as one billion dollars for an offshore island; (2) the costs of tax benefits and other subsidies provided by various governments to oil producers, ship owners and operators; (3) the costs of operating such ports, including costs arising from environmental protection measures, such as traffic controls and oil spill containment systems; (4) the costs for environmental safeguards incorporated on vessels, such as double bottoms or double hulls; and (5) the environmental and other social costs associated with construction and operation of the total delivery system. These costs must then be compared with the costs of systems using smaller tankers, either for transshipment from the Bahamas or the Caribbean (where terminals presently exist) or direct throughput.

To our knowledge, no comprehensive analysis of the total costs and benefits of a supertanker transport system has been made. Such a study is essential before valid conclusions can be drawn regarding the alleged economic benefits of supertanker/superport development.

C. Environmental Consequences of Deepwater Port Development

Even if the energy policy and economic issues are resolved in favor of deepwater port development, the environmental issue remains. Supporters of U.S. deepwater port development claim that it will provide environmental benefits. These benefits—primarily reduced collision risks resulting from the decrease in the number of vessels needed to serve particular levels of demand—are uncertain at best. As the authors of the Maritime Administration's recent impact statement on its tanker construction program noted, "the mechanisms and mathematics of collisions are not well understood and estimates of the effects of traffic levels upon casualty rate are highly speculative. . . ." *Final Environmental Impact Statement on Tanker Construction Program* (May 30, 1973) (N.T.I.S. Rep. No. EIS 730725–F).

Even assuming that a greater accident risk would be inherent in any increased tanker fleet, it is far from clear that these risks are greater than those posed by superport development. The oil spills risks posed by supertankers themselves are unprecedented. It has been estimated that a massive spill from a 400,000 DWT supertanker about 20 miles offshore Delaware could form an oil slick affecting states as far north as Massachusetts and inflicting damage on coastal states totalling as much as $2.8 billion. *Final Environmental Impact Statement on Tanker Construction Program* (May 30, 1973) (N.T.I.S. Rep. No. EIS 730725–F). Moreover, the direct and indirect effect that construction and operation of deepwater terminals would have on the surrounding marine and coastal environment, including land use, air and water pollution, solid waste, disposal, aesthetic problems and increased demands for public services related to development of storage facilities, refineries and petrochemical plants, may eventually prove more significant than the oil spill risk.

Complete assessment of these risks may ultimately militate in favor of reliance on transshipment facilities in, for example, Canada or the Caribbean, or the development of a fleet of shallow draft tankers, or even an increase in size of the conventional tanker fleet, coupled with appropriate vessel traffic and design controls, rather than development of deepwater port facilities in U.S. coastal waters.

II. LACK OF INSTITUTIONAL AND POLICY FRAMEWORK

Not only are fundamental issues concerning the need for and environmental effects of deepwater ports unresolved, but an adequate institutional and policy framework for dealing with the problems posed by such development is lacking. The magnitude and complexity of the planning and regulatory problems inherent in constructing and operating deepwater ports cannot be overemphasized. Development of deepwater ports cannot be separated from fundamental questions of national, regional and local land use planning, all of which must be dealt with in a consistent manner from the point of view of management of the coastal zone as a whole. The construction and operation of such facilities further raise important questions of state-federal regulation and cooperation, of jurisdictional conflicts among several federal agencies, and of possible constraints imposed by international law and treaties, as well as issues of private versus public funding, construction, ownership and operation. Finally, development and coordination of regulations respecting port reception facilities, spill containment devices, traffic control systems, and design and construction characteristics of ships permitted to serve U.S. deepwater ports will necessarily be integral to the safe operation of such facilities.

No institutional or legal framework exists for resolving in a comprehensive way the important and complex issues raised by potential deepwater port development. Deepwater development is presently subject to a crazy quilt of certifying authorities and overlapping jurisdictions; for example, at the federal level, numerous agencies, *e.g.*, Coast Guard, EPA, NOAA, the Federal Power Commission, the Bureau of Land Management, the Bureau of Sport Fisheries and Wildlife and the U.S. Geological Survey, and numerous statutes with different objectives and standards, *e.g.*, the Outer Continental Shelf Lands Act, the 1899 Rivers and Harbors Act, the Coastal Zone Management Act of 1972, the Federal Water Pollution Control Act, the Ports and Waterways Safety Act of 1972, the Fish and Wildlife Coordination Act and the National Environmental Policy Act of 1969, all must be dealt with in examining any deepwater port proposal. Finally, it is unclear if any federal agency has the power to authorize construction of a port facility in areas beyond the territorial sea.

Despite the substantial problems outlined above, none of the bills currently pending in Congress which would regulate deepwater port development, including the Administration's proposal, provides for a comprehensive planning approach for treating the energy policy, land use and environmental issues at stake, and all the proposed legislation would continue or even exacerbate the existing fragmentation of authority.

The environmental organizations I represent are concerned that a commitment may be made to deepwater ports in this country and that design, planning, construction and operation of such facilities may proceed without full and systematic consideration of all alternatives and implications and without an adequate input from local, state and regional authorities, as well as the public. Since this country is at the inception of perhaps extensive and novel coastal development, the opportunity exists for a comprehensive systems approach to such development—the only approach which will ensure effective environmental protection—taking into account all relevant economic, social, political, and environmental facts. Each proposal currently before Congress must be evaluated in the context of the need for such an overall approach.

III. GENERAL PRINCIPLES FOR REGULATING DEEPWATER PORT DEVELOPMENT

If resolution of the issues outlined above indicates that construction of deepwater ports might be appropriate, the environmental groups believe that several principles should be reflected in the development of a national deepwater port policy. These are:

1. *Place Interim Moratorium on Development.*—Development of deepwater ports should be subject to a moratorium until there is a sufficient informa-

tional and institutional basis for establishing a coordinated policy approach for such development within the context of an overall coastal zone management program. Because private oil companies with the sanction of some states are rapidly implementing plans for deepwater terminals, the need for such a moratorium is immediate. Absent a moratorium, these projects may proceed to completion and frustrate any effort to develop a sound, coordinated program for resolving the fundamental issues of environmental, energy and land use policy at stake.

2. *Ensure Limited Initial Development.*—Because oil import projections are uncertain, foreign transshipment facilities are available, and the environmental risks associated with deepwater port development are serious, responsible policy dictates limited development of such facilities. Possibly, only a single pilot project should be authorized initially, with future port authorization to be based on the results of the pilot project. In any event, it seems unwise at this time to permit construction of more than one port in any one sector of the country, although, at some future date, it is conceivable (as was pointed out in the President's Energy Message of April 18) that construction of dispersed, smaller deepwater ports may be preferable to construction of one massive port to serve an entire coastal region.

3. *Consider Specific Legislative Approval.*—Not only should the number of deepwater ports initially authorized be limited as a matter of prudent policy, but all of the government studies of which we are aware support the view that, even assuming a substantial growth in reliance on oil imports, only a limited number of deepwater port facilities may be required. In such circumstances, specific legislative approval of each project may be appropriate at least as regards basic commitments to and locations for development.

4. *Provide for State Approval.*—There must be adequate opportunity for regional, state and local interests to participate effectively in any decision to site, construct, and operate a deepwater port facility. As noted above, construction and operation of deepwater port facilities within or immediately adjacent to the territorial waters of one or several coastal states may not only pose direct and substantial threats to the coastal and marine resources of such states, but may also induce substantial secondary impacts on land use, water resources, and public services, as well as increase industrial concentration in regions which they serve. State and local governments have traditionally had the authority to regulate these kinds of impacts and, in so doing, have developed substantial resources and experience which have been recognized in federal legislation concerned with air and water pollution. In particular, the critical role of states and regional interests and of coordinated efforts in planning, managing and regulating development of this country's coastal zone was recently recognized by Congress in enacting the Coastal Zone Management Act of 1972 (Pub. L. No. 92–583).

We believe that it is essential that any scheme for regulating deepwater port development provide that any state adjacent to such development can disapprove such development, whether or not the facility is to be located within its territorial waters, (a) if it would be inconsistent with an established state land use or coastal zone management plan or policy and/or (b) if it is likely to result in significant adverse environmental effects within the state's jurisdiction. The decision to approve or disapprove should be evidenced by specific findings and conclusions and subject to judicial review.

Additionally, as a necessary corollary of effective state participation, power should be vested in states to prescribe stricter environmental or safety standards for facilities (as well as transshipment modes, i.e., pipelines or vessels) within their jurisdiction than may be required by federal laws or regulations.

5. *Establish Uniform Regulatory Scheme.* There should be a uniform scheme of regulation for deepwater port development which applies regardless of whether the port would be located within the territorial sea or above or upon the Outer Continental Shelf, subject, of course, to limitations imposed by international law.[2] The issues involved in planning and overseeing deepwater port development simply do not divide along such arbitrary lines,

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[2] Under existing principles of international law, such a scheme might not be directly applicable to ports constructed and operated on the Outer Continental Shelf by foreign nationals, but regulation of such activities might be achieved through rules governing transport into the U.S. by pipeline or feeder vessel. The same considerations apply to setting standards for a delivery system. See point 8, *infra*.

and it would therefore not be advisable to allow creation of a system where one agency with one set of standards would license development of deepwater port facilities on the Outer Continental Shelf and another agency with another set of standards would license their development within the territorial sea.

6. *Create Single Coordinating Agency.*—A single federal agency should have primary responsibility for coordinating and overseeing construction and operation of deepwater port facilities. This agency would be responsible for evaluating all phases of a proposed petroleum delivery system—vessel transport, site selection, construction mode, pipeline design, landslide support facilities, etc.—in terms of environmental and socio-economic factors, taking into account regional, state and local interests and other current and proposed uses of the coastal zone. The agency would coordinate appropriate environmental reviews and appraisals provided by other bodies with expertise and authority in discrete areas and would be required to consult, as appropriate, with such bodies. Also, the agency mandate should provide that no project should be approved as environmentally sound where it is likely to result in significant adverse environmental effects—which include landside economic development as well as marine pollution and damage to coastal ecosystems—and reasonable alternatives are available which would reduce such effects.

7. *Provide for Economic Regulation.*—If only one or two deepwater port facilities are constructed, they will constitute a scarce and valuable resource which will require substantial economic regulation by the federal government. Financing, ownership and charges for use of deepwater port facilities should thus be covered in any regulatory framework, in particular because of the potential for monopoly profit, and perhaps some share of the revenues should be provided to coastal states to assist in dealing with adverse environmental effects. In any event, such facilities should not be promoted through the availability of substantial federal subsidies.

8. *Set Standards for Delivery System.*—Present federal authority to regulate vessel design, to provide for vessel traffic services and systems, and to regulate the design, construction and operation of facilities used for bulk transfer of oil to and from vessels should be expanded to cover vessels and facilities used in connection with U.S. deepwater ports located in the contiguous zone or on the Outer Continental Shelf. Indeed, to the extent that deepwater ports are built, thereby encouraging supertanker traffic in or near U.S. navigable waters, it may be that special standards of design and construction should be required of such vessels as a condition to their use of United States facilities. Similarly, special standards for traffic control systems, oil spill containment devices, off-loading equipment and pipeline connections might be required of such facilities. At an absolute minimum, a specific requirement for a positive, mandatory vessel traffic control system, such as that recently proposed by Senator Gravel for the Alaskan trade, coupled with automatic collision avoidance radar plotting devices aboard ship, appears a necessity to reduce the risk of accident at such facilities.

9. *Locate and Isolate Facilities Far Offshore.*—If it is decided to utilize supertankers to transport petroleum imports to the United States, the deepwater port facilities developed to accommodate them should be located offshore at a substantial distance from bays and estuaries, should be dedicated solely to the petroleum trade, and should be isolated from other vessel traffic. This policy is extremely important for minimizing disturbance of the estuarine and coastal marine resources which are the most vulnerable to damage from dredging, spoil disposal and oil pollution. It would avoid dredging and construction activity in ecologically sensitive estuarine regions. By restricting supertanker traffic to offshore areas, the risks of groundings and collisions generally associated with operations within narrow and shallow harbor approaches will be reduced for such vessels. By isolating supertankers from other vessel traffic, the risk of collisions and groundings is even further reduced. Finally, should an oil spill from a supertanker occur, it would be located a substantial distance offshore which would provide more time for containment and cleanup before becoming a threat to the delicate coastal areas.

10. *Transport Oil to Shore by Pipeline.*—Oil should be transported from deepwater port facilities to shore by buried pipelines (routed around significant marine breeding grounds) rather than transshipped in smaller

tankers and barges. Although pipelines are not free from environmental risks and substantial efforts are needed to improve pipeline safety technology, this approach would appear to minimize vessel traffic congestion and spill probabilities incident to tanker accidents and ship loading and unloading activities. This requirement and the requirements of isolating deepwater ports well offshore and establishing special standards for associated delivery systems are of such importance that they should be expressly set forth in authorizing legislation, rather than left to agency discretion.

CONCLUSION

In conclusion, I reemphasize the need to proceed with the utmost caution in assessing the need for and authorizing the development of deepwater port facilities and to avoid any commitments to such facilities pending development of adequate information and institutional capacity to resolve the complex issues of environmental, energy and land use policy which are at stake. Development of offshore port facilities, which represents a major new endeavor in the marine environment and which may pose unprecedented threats and challenges to the integrity of our coastal waters and lands, should be allowed to proceed only in the context of a comprehensive, multi-interest planning and regulatory framework for management of the coastal zone. I urge that the highest priority be assigned to vesting a single authority with overall planning and coordination responsibility for developments in the coastal zone, and to insuring that affected states, regions and the public have an effective role in the decisionmaking process.

Statement of the American Petroleum Institute

THE ENERGY CHALLENGE

The need for deepwater terminals for the United States is directly related to the current inability of this country to satisfy all of its energy requirements from domestic sources. We must rely on imports of oil to fill the existing gap and all projections confirm that in future years this reliance will grow. In 1972 petroleum imports from abroad were 4.7 million b/d. By 1985 this is expected to increase by 2 to 4 times.

Ultimately, our dependence on foreign sources of supply can be lessened by accelerating the development of crude oil deposits believed to exist in coastal waters off the United States, by greater reliance on nuclear power and by technological advances in the conversion of coal to more usable forms of energy. However, none of these actions is expected to provide more than partial answers in the next few decades although all must be pursued vigorously for the contributions they can make. Concurrently with efforts to expand our domestic energy sources, programs for conserving energy should be actively promoted. We must still recognize, however, that this country is faced with an increasing dependence on foreign sources of supply for the foreseeable future.

This is a problem of national scope. Failure to meet the growing energy demands by increasing petroleum imports would have an adverse impact on every home and industry in the United States. Interior states would feel this impact as directly as coastal states. Although petroleum imports will necessarily enter the country through coastal installations, the entire nation will realize the benefits of these imports through the high efficient transportation network of the petroleum industry. In the absence of such imports, the economy of the nation must inevitably suffer.

THE NEED FOR DEEPWATER TERMINALS

About 85% of the free world's known crude oil reserves are located in the Middle East, Africa and South East Asia. It is these reserves upon which the United States, along with other crude deficient nations, must depend to supply their growing energy requirements. In shifting to, and increasing our dependence upon distant foreign countries, it is essential that foreign crude be imported in the most efficient and economical manner possible consistent with national security and environmental factors. Large tankers employed in conjunction with deepwater terminals off our shores will help accomplish these ends.

Typically, a tanker voyage from the Middle East to the U.S. East Coast involves a 24,000 mile round trip. In moving substantial volumes of petroleum over such great distances, the economics of tanker transportation clearly favor using large vessels. The cost of shipping petroleum from the Middle East to the United States can be reduced by as much as 30% if 250,000 deadweight tons (DWT) vessels are used rather than 70,000 DWT vessels. This cost difference could represent an annual savings of over one-half billion dollars in 1980. However, there are at present no port facilities in the United States which can accomodate very large crude carriers (VLCCs)—that is vessels larger than 200,000 DWT which normally require over 65 feet of water.

Over 80% of the tanker tonnage on order today is in the VLCC category. By 1980 VLCCs will make up more than two-thirds of the free world fleet capacity. This capacity would not be available for U.S. trade unless deepwater terminals are developed.

ENVIRONMENTAL CONSIDERATIONS

In view of the urgent national need for deepwater terminal facilities, it is reassuring to know that the technology required to construct such facilities and operate them safely is already well established.

There are over 60 ports and terminals in the world constructed to accommodate VLCCs. These represent several basically different concepts. The United States is fortunately in a position to capitalize on this reservoir of knowledge and operating experience. However, despite this relatively advanced "state of the art" and the transportation savings which can be effected there remains opposition by some to the construction and operation of VLCC terminals.

This opposition rests partly on the fear of massive spills which could cause heavy pollution of coastal areas. Unfortunately, some of those who raise this objection may not be considering the practical alternatives for handling petroleum imports. If they are realistic and relate the hazards of a deepwater terminal to the hazards of importing substantially larger quantities of petroleum by traditional methods using small tankers, a truer picture can be seen.

In testimony before the House Merchant Marine and Fisheries Committee on June 14th the Honorable Russell E. Train concluded that the anticipated spillage would be more than 10 times greater using 50,000 DWT tankers compared to the spillage using the 250,000 DWT size. This general conclusion has been analytically confirmed by several independent groups and stems from at least four factors:

1. Dependence on small tankers for handling increasing volumes of of petroleum will significantly increase harbor traffic. Using the tanker sizes just quoted from Mr. Train, the 250,000 DWT tanker would reduce the number of ship calls necessary to supply the nation's import requirements by 80% compared to those required if 50,000 DWT tankers were used. An increase in congestion in restricted waterways will result in increased risk of marine accidents, such as vessel collisions and groundings.

2. Use of smaller vessels means the discharge cycle must be repeated much more frequently than when using large vessels. Operating experience shows that spill hazards are generally the greatest while connecting and starting to discharge and while disconnecting. To the extent these operations are performed less frequently with large vessels, there will be a corresponding decrease in the risk of pollution.

3. In the absence of deepwater ports, spills would occur at established ports in confined, sometimes protected waters, where the effects would likely be more ecologically damaging than if they occurred in open waters at a deepwater terminal.

4. The new generation of deepwater terminal facilities and ships will incorporate the latest technological advances in equipment design and operating devices.

Based on these factors, early construction and operation of deepwater port facilities is sound from the standpoint of minimizing oil pollution of the marine environment.

FINANCIAL RESPONSIBILITIES

API has long supported ratification of both the Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage and The International Convention on Civil Liability for Oil Pollution Damage. These conventions set forth the liability which will obtain in event of a spill and provide for coverage of such liability. It is recognized, however that additional time will be required for these conventions to be ratified by the requisite number of nations and become effective internationally.

In the meantime, two segments of private industry—the tanker owners and the cargo owners—have themselves voluntarily established two international compensation programs covering tanker spills. One is the *Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution* (TOVALOP), which requires participating tanker owners either to remove any oil negligently discharged or to reimburse the government of a country whose shore line is damaged or (threatened) by such a spill. Under TOVALOP, a tanker owner has a liability up to $100 per gross registered ton of the tanker, with a maximum of $10 million per vessel per incident. At this time more than 99.5% of the world's non-governmental tanker tonnage is covered under TOVALOP.

The second program is the *Contract Regarding an Interim Supplement to Tanker Liability* (CRISTAL), which has been developed by oil cargo owners to provide additional protection—for private citizens as well as for governments—by extending the limit for each incident up to as much as $30 million. CRISTAL is, literally, a legal contract that now binds more than 90% of the international petroleum industry, as measured by the volume of crude and fuel oils that participants transport by tanker. Under CRISTAL, participants have a contractual obligation to provide their pro rata share of funds needed to pay compensation for pollution damage up to a maximum of $30 million per incident, less the sums available from the shipowner under applicable law and from TOVALOP.

Both TOVALOP and CRISTAL are designed as interim measures pending the time when the Liability and Fund Conventions come into effect. The broad industry coverage under these programs provides sound protection in the event of a spill and encourages prompt remedial action.

VLCC OPERATIONS

Vessel safety is a prime consideration in building and operating tankers. The very nature of the cargo dictates this priority. VLCCs represent a new generation of vessels—the first was placed in operation in 1967. They are equipped with the most modern navigational and other safety equipment and operating features. Such vessels often have centralized cargo handling systems which permit close control of operations as well as constant monitoring of all cargo valves, pumps and tanks during loading and discharge.

Many companies have training programs to assure that senior officers maintain their vessel operating proficiency. Such programs may involve the use of complex equipment which simulate the bridge of a vessel underway and allow the officer to sharpen his shiphandling techniques under highly realistic conditions. Programs are also conducted to instill among crew members a continuing awareness of the importance of safe, pollution-free operations.

Federal agencies have for years been active in the establishment of sea lanes for vessels in areas of heavy marine congestion along U.S. coasts. Under the Ports and Waterways Safety Act of 1972 the Coast Guard is charged with the responsibility for the establishment, operation and maintenance of vessel traffic control systems in congested port areas. This experience will be useful in developing procedures for regulating vessel traffic in the vicinity of deepwater port installations.

The operating characteristics of the new generation of VLCCs are widely misunderstood. Like their smaller counterparts these vessels may be readily controlled, even at reduced speeds. The fundamental point is that with increased ship size, greater time is required to perform maneuvers. This requires that maneuvers be anticipated and initiated earlier than with smaller vessels. However, the room needed for turning, for example, does not increase nearly in proportion to vessel size. In fact, when the room needed to turn is expressed in proportion to ship length, it is usually found that the larger tanker requires a smaller number of ship lengths in which to turn than the smaller tanker.

The stopping distance of vessels from full speed is frequently mentioned in discussing vessel maneuverability. This is a misleading yardstick as the master of a vessel will gradually reduce speed when approaching or entering a harbor or other areas where traffic is congested. As would be expected, substantially less distance is required to stop at low speeds. The stopping distance for a typical VLCC from a speed of 15 knots is on the order of 3 miles . . . considerably less than the 10 miles which is often claimed. However, the stopping distance from full speed is not particularly relevant when it is recognized that a master of a vessel operating at full speed in the open sea will avoid close quarter situations with other vessels by changing course rather than by bringing the vessel to a stop.

While the new large vessels may appear ponderous, their basic handling characteristics are, in reality, not greatly different from much smaller vessels. As a matter of fact, some ship masters have pointed out that under certain wind and sea condiions they would much prefer to handle a VLCC as it is easier to control than a smaller, lighter vessel.

THE IMPACT OF DEEPWATER TERMINALS

It should be noted that construction of new deepwater petroleum facilities will not undermine the economic viability of existing ports. Existing ports would continue to handle smaller tankers such as those used in coastal trades, as well, of course, as all dry cargo and liner traffic. However, this new generation of special purpose terminaling facilities is essential for handling crude imports largely in excess of present crude imports.

Studies indicate that there is little incentive to expand petroleum terminal facilities into multi-purpose facilities where ores, grain, coal and other cargoes could be handled. Vessels handling such cargoes generally do not require the water depths necessary for VLCCs and such multi-purpose terminals would be extremely costly. In short, we view deepwater facilities for the importation of petroleum as single-purpose installations designed solely for that purpose.

It has been suggested that a deepwater terminal would encourage industrialization and change the character of the adjacent shoreline. Physically, the terminal could have relatively little impact on the environment. Onshore facilities could consist of a minimal tank farm and pump station which could be landscaped and unobtrusive. Ship receiving facilities could be well offshore and equally unobjectionable.

A deepwater terminal need have little effect on industrialization of the adjacent area except as desired by state and local governments. Planning, zoning, and land use regulations exercised by local governments can maintain the same control over industrial development as at present.

Proof that deepwater terminals can be built and operated without changing the character of the shoreline can be found in several parts of the world. VLCC terminals have been operating in Ireland's Bantry Bay and Southern Japan's Kagoshima Bay for years without creating ancillary industrialization or otherwise disturbing the character of the area.

Individual states and local jurisdictions have the recognized right to establish land use plans and zoning restrictions. Indeed, land use regulation is becoming increasingly common—normally with the objective of prohibiting development incompatible with long range plans. The exercise of these rights, however, must stand the test of reasonableness and should not be applied in such a way as to prohibit arbitrarily the free flow of interstate and foreign commerce. With particular reference to approving the construction and operation of deepwater port facilities, coastal states may properly seek to preserve the scenic beauty and recreational value of the national shoreline. However, in exercising this prerogative, those states also have the responsibility for assuring that the restrictions placed on shoreline developments do not unreasonably stifle the well being of interior states which will also be critically dependent on imported crude. An ideal situation would be one in which individual states cooperated with the Federal Government and with industry in assuring that all appropriate environmental precautions are taken and that there is a minimum effect on the character of coastal areas.

LEGISLATIVE ASPECTS

Private industry has indicated a willingness to finance the construction and operation of deepwater facilities. Testimony before this Committee by representatives of the proposed LOOP and Seadock projects in the Gulf of Mexico provide evidence of their capabilities to handle all aspects of the projects. However, legislation is required to confirm the right of the Federal Government to regulate location and operation of these facilities beyond the limits of the territorial sea. The Federal Government should establish its right to authorize offshore terminals beyond the territorial sea as a "reasonable use" of the contiguous zone and high seas.

It is evident that if the United States is to realize the benefits of the lower marine transportation costs and environmental advantages which will result from the use of deepwater terminals, legislation must be enacted which will encourage applications to be processed expeditiously. Actual construction of the facilities will generally require up to two years. If legislation required, say, an additional two to three years to secure necessary administrative authorizations prior to proceeding with construction, the extended time schedule for accommodating VLCCs could very seriously compromise national interests.

Consequently, there is a compelling need for Congress to authorize a single agency to issue licenses for the construction and operation of deepwater oil terminals and appurtenant facilities and to promulgate such regulations and guidelines as may be necessary for construction and operating of such facilities. The licensing agency should be directed to seek the advice and counsel of other federal and state agencies on matters relevant to their areas of responsibility insofar as they are affected by the location and operation of deepwater facilities. The licensing procedures of the agency should have nationwide application. They should be sufficiently flexible to cover various terminal designs each of which may have its special advantages at particular locations.

The Administration Bill, H.R. 7501, appears to cover most of these points. It establishes a single agency to coordinate the licensing and regulation of deepwater ports, and, in our view, is the most comprehensive legislation which has been proposed. However, we believe that existing Acts should not be amended, but rather that a new Act be adopted, for the simple reason that there are specialized considerations in the location and operation of deepwater terminals. A new Act would encourage development of regulations specifically governing their installation and operation.

In granting licenses, the designated agency should strive, in light of immediate domestic energy needs, to achieve a sensible and realistic balance between the nation's economic, environmental, and national security requirements. Legislation should not grant states a veto power to prevent construction of deepwater installations. A veto arrangement could create an unfortunate inflexibility. It might be invoked arbitrarily and thereby frustrate efforts to develop deepwater installations which would ultimately prove mutually acceptable to both state and federal interests. Rather, Federal legislation should facilitate the prompt resolution of differences between various levels of government on the siting of deepwater facilities.

In summary, we believe there is an immediate need, stemming from the rapid growth in U.S. petroleum imports, for legislative action which will establish procedures under which suitably located deepwater terminal facilities can be constructed without delay. Deepwater terminals will afford both environmental protection and economic benefits. We firmly believe that prompt enactment of such legislation would be in the best interest of our country.

WODCON,
World Dredging Conference,
San Pedro, Calif, August 2, 1973.

Hon. Leonor K. Sullivan,
Chairman, Merchant Marine and Fisheries Committee,
House of Representatives,
Washington, D.C.

Dear Ms. Sullivan: It is my understanding that your committee is gathering points of view and information relative to deep water ports in the

United States. However, we also understand that your deadline for receiving this information may have passed. I would like to extend a few remarks for your guidance at this time; and, if you need a follow-up presentation, you would at least know about our organization and be able to contact me for the updating.

In enclose some background information on the World Dredging Conference Association, to give you some indication of the extent of representation that our association has throughout the world. We are a California corporation and a United States based organization with its objectives strictly technical and educational for the industry, without a lobby or other governmental purposes.

It is the general feeling among our members throughout the world, that the dredging industry has the capability to dredge and maintain ports below the 100-foot level. In the case of our U.S. membership, this position extends to the dredging of existing ports or the creation of new ports in the hinterland along the contiguous coastline of the United States, to the 100-foot datum.

Several of our member companies are presently engaged in dredging ports in other parts of the world to 85 feet, and some exceeding 100 feet in depth to accommodate the VLCC's and larger mammoth tankers with future projections to 1,000,000 dwt. It is evident to us that, in spite of the reluctance of the United States to develop its ports to a hundred feet plus depth, ships (both tankers and bulk carriers) will continue to grow in size, eventually reaching even the 1,000,000 dwt capacity. Private industry in the United States is prepared, in some quarters, to mobilize the necessary dredging equipment to undertake dredging of certain ports to depths necessary to accommodate vessels with drafts in excess of ninety feet.

The necessary technology is available, and, in certain areas of the world, is being employed to dredge harbors and create new harbors with depths to a hundred feet. Our industry, and members of our Association with international connections and relationships, is capable of mobilizing the necessary team to economically accomplish this task in the United States.

The dredging industry probably has more experience in terms of years and man hours involved on the subject of pollution control and remedial action in harbors and waterways than any other single industry. It is the opinion of leading members of our industry that the ecological problems of containing oil spills and avoiding oil spills, for instance, can better be accomplished in a calm harbor than in an open sea condition such as offshore terminals. While we support the need for offshore terminals and buoy fueling systems as a short term urgency measure to meet our energy requirments, we see the long-range necessity of developing inland ports sufficient to meet the new generation of super ocean carriers.

WODCON Association is planning to organize a briefing seminar in Washington sometime in October, for the purpose of presenting more detailed facts concerning the capability of the dredging industry to dredge ports to one hundred feet in depth and maintain them at that depth through dredging. We would be pleased to have the cooperation and participation at this one-day session by members of your Committee. Please let me know if there would be interest on the part of your Committee on such a briefing.

Very respectfully,

M. J. Richardson,
Executive Secretary and Director.

WODCON 1973—Goal: The Advancement of Dredging Technology

MEMBERSHIP

Corporations, partnerships, joint-venture companies or government agencies involved in some aspect of the dredging industry are eligible for full membership upon application to WODCON Association. No other class of membership is available.

ORGANIZATION

WODCON Association is a nonprofit corporation, industry association, and is chartered under the laws of the State of California. As such there is no stock ownership of WODCON. It is governed by a Board of Advisers and

Board of Directors. Each member company or group of companies is entitled to one representative on the Board of Advisers. The same applies to government members. WODCON was first organized on May 8, 1967 at the Marco Polo Club, Waldorf Astoria Hotel, New York City.

ACTIVITIES

1. Sponsor a conference approximately every eighteen months, whose primary purpose is to stimulate interest within the dredging industry for individuals to prepare and present technical papers on subjects dealing with dredging and dredge design; to publish and disseminate the proceedings on the broadest possible basis; to arrange for the presentation of industry exhibits and thus couple practical hardware with written theories and presentations on the advancement of dredging technology.
2. Present an award at each conference to the author of the paper delivered at the conference which is judged by the Technical Paper Committee to represent the greatest contribution to the advancement of dredging technology at that conference.
3. Sponsor research programs beneficial to the dredging industry worldwide.

CURRENT PROJECTS

1. Dredging and Marine Ecology—the purpose of the project is to develop a dredging handbook containing guidelines and supporting data that will assist in the planning and conduct of dredging projects, minimizing harmful effects on the environment or, where possible, improving and enhancing it.
2. Dredge Standards—this project was established in connection with the Dredging Fleet Insurance Program and is intended to consolidate and improve upon existing classifications, standards and survey guidelines applicable to all types of dredges and their various operations.

ASSOCIATION MEMBERS

Ackermass & Van Haaren (S.A. Enterprises)—Belgium
Adriaan Volker, N.V.—The Netherlands
American Marine & Machinery Co., Inc.—U.S.A.
Andac International Ltd.—Hong Kong
*Argentina—Public Works, Ports & Harbors
Australian Dredging & General Works Pty. Ltd.—Australia
Ballast Nedam Groep N.V.—The Netherlands
Barnegat Bay Dredging Co.
C. F. Bean Corporation—U.S.A.
Beaver Dredging Company Ltd.--Canada
Bos & Kalis—Portugal
Bos Kalis Westminster Dredging Group N.V.—The Netherlands
Bos & Kalis Baggermaatschappij N.V.—The Netherlands
Bos & Kalis Baggermaatschappij N.V.—Belgium
Bos & Kalis Societe de Dragage—France
*Brazil—Companhia Brasileira de Dragagem
B-R Dredging Co., Inc.—U.S.A.
Cal-Surance Associates, Inc.—U.S.A.
*Canada—Dept. of Public Works
*China (Republic of)—Ret—Ser Engineering Agency
Costain-Blankevoort Int'l Dredging Co., Ltd.—The Netherlands
DredgeMasters International—U.S.A.
Dredging & Construction Co., Ltd.—The Netherlands
Ellicott Machine Corporation—U.S.A.
Enterprise Guineene de Travaux Publics & Martimes—Republic of Guinea
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IHC Holland—The Netherlands
Philipp Holzmann AG—Germany
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*National Members.

International Mining Corp.—U.S.A.
T. L. James & Co., Inc.—U.S.A.
James Contracting & Shipping Co. Ltd.—U.K.
*Korea—Korea Dredging Corporation
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Rinkai Construction Co. Ltd.—Japan
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Societe Franco-Neerlandaise de Travaux Publics et de Drages—The Netherlands
Societe Generale de Dragage—Belgium
Toa Harbor Works Co., Ltd.—Japan
Toyo Construction Co., Ltd.—Japan
Van Hattum & Blankevoort N.V.—The Netherlands
*Venezuela—Instituto Nacional de Canalizaciones
Westminster Dredging Co., Ltd.—U.K.
Westminster Dredging Group—U.K.
Westminster Dredging (Australia) Pty. Ltd.—Australia
Westminster Dredging (West Africa) Ltd.—Nigeria
Westminster Gravels Ltd.—U.K.
Wiley Manufacturing Company—U.S.A.
Williams-McWilliams Company—U.S.A.

[Whereupon, at 11:10 a.m., the committee recessed, subject to the call of the Chair.]

APPENDIX

Report on an inspection tour of the offshore terminal at Bantry Bay, Ireland, and the combination terminal-refinery complex at Milford Haven, Wales.

U.S. House of Representatives,
Committee on Merchant Marine and Fisheries,
Washington, D.C., July 10, 1973.

Memorandum

To: The Honorable Leonor K. Sullivan, Chairman Committee on Merchant Marine and Fisheries.
From: Ernest J. Corrado, Chief Counsel.
Subject: Report on recent visit to the offshore terminal at Bantry Bay, Ireland and the combination terminal-refinery complex at Milford Haven, Wales.

On Monday, June 18, and Tuesday, June 19, 1973, the American Petroleum Institute party examined the offshore terminal facility at Bantry Bay, Ireland and the terminal-refinery complex at Milford Haven, Wales. The party consisted of oil industry personnel, conservationists, environmentalists, and several Federal Government personnel.

In 1966, the Gulf Oil Corporation decided to build a crude oil terminal at Whiddy Island, Bantry Bay, Ireland. The first supertanker to use this facility, the "Universe Ireland", arrived at Whiddy Island on October 29, 1968.

This terminal facility has a capacity of approximately one million tons of crude oil, consisting of twelve tanks 64 feet high and 262 feet in diameter with an approximate capacity of 80 thousand tons each. In addition, there are two 500,000 barrel tanks specially built to receive ballast water from smaller tankers. This is later pumped aboard the "Universe" tankers for their return to Kuwait. Ballast is required to keep the tanker in a maneuverable condition and trim and to keep its propellers immersed in the water.

This facility at Whiddy Island in Bantry Bay is strictly a transshipment facility and is not a refinery complex or a storage depot. The Bantry Bay facility is an island complex with the loading and offloading facility 1,300 feet from shore, with a depth of water of about 105 feet on its outer side and 92 feet on the inner side. The "Universe" class of tankers, assisted by tugs, berth on the outer side of the offshore pier and the smaller tankers line up on both the inner and outer sides. Oil is discharged from the Universe tankers at a maximum rate of 15,000 tons (or 100,000 barrels) per hour into the storage tanks on the island. Oil may also be discharged directly from larger tankers into small ones when they are berthed at the same time on opposite sides of the pier. The six "Universe" tankers were built in Japan between 1967 and 1969 and are on long term charter to the Gulf Oil Corporation from National Bulk Carriers, Inc., New York. The "Universe" tankers are 1,135 feet long with a beam of 175 feet and an 82-foot draft. These 326,000 DWT vessels have a speed of 16 knots and a crew of 52 officers and men. Oil is stored in 22 compartments with a maximum cargo capacity of 2,200,000 barrels (more than enough to run a 60,000-barrel-a-day refinery for a month).

The Bantry Bay facility differs from the type of offshore ocean terminal facilities the United States is contemplating in that it is just a transshipment point consisting of a narrow concrete pier on pilings some 1,600 feet long and 1,300 feet from the shore of Whiddy Island with hose connections imbedded in the bottom of Bantry Bay in concrete which run to the storage facilities located on Whiddy Island. This facility is deep in Bantry Bay and in a very sheltered position. The U.S. is contemplating offshore terminals situated some 15 to 25 miles out in the ocean, completely exposed to the elements.

Gulf Oil's statutory basis for establishing the Whiddy Island complex is the Petroleum Act of 1871, which established a weak licensing authority for this facility. The Petroleum Act provides for the license to be granted by the local authority in conjunction with the proprietary interest. This Petroleum Act of 1871 was repealed and superseded by the Dangerous Substances Act of 1971. This Act provides for the licensing of this terminal facility by the Cork County Council.

The Gulf Oil Corporation has been attempting to get on with the business of obtaining a new license under the Dangerous Substances Act for the past eight months but has been unable to get any satisfaction whatever to date from the Cork County Council. The Gulf Oil Company purchased from farmers about 194 acres of land on Whiddy Island for the storage aspects of this faciltiy and leased a rectangular area of about 400 square yards for the offshore operations of the loading facility. This facility differs from our proposed facility inasmuch as the Gulf Oil Company offshore terminal is right in Bantry Bay and clearly within the Irish territorial waters. Interestingly, as mentioned before, the licensing power for such facilities is with the local authorities (Cork County Council). Our facility will undoubtedly be some 15 to 25 miles out to sea, which will put it beyond U.S. territorial waters, beyond the contiguous zone, and apparently beyond the legal reach of the local state authority for such matters as licensing and leasing and operational control.

The Bantry Bay facility has an international problem inasmuch as a foreign corporation is operating the facility in the local Irish territorial waters and this is quite a sensitive point with the local traditions, inhabitants and authorities. Our facility, on the other hand, has all the inherent problems of establishing a sovereign entity in international waters.

There is no Irish Coast Guard to speak of and there is no local Bantry Bay Harbor Authority. Thus, there is no regulation of vessel traffic using this facility, nor is there any regulation of the loading and unloading procedures and operations. This loading and unloading is done over the watchful eye of the Bantry Bay Gulf Oil personnel but there is no local State or Federal regulation of these matters as there would be with our facility. Nor is there any authority to impose the use of bridge-to-bridge radiotelephone between using vessels, nor is there any authority or procedure for vessel traffic or operational control as under the Ports and Waterways Safety Act. As a practical matter, the vessel traffic and berthing are controlled by the facility personnel.

There did not appear to be any pollution in the Bay at the time of our visit and the Terminal Manager claims that he had only three minor spills last year. Their spills always occur during the loading of a smaller tanker, which is more under the control of the tanker's crew than the offloading into storage tanks, which is under greater control by terminal officials. Also, it was noted that the Gulf people have made every effort to keep a low profile in the area. The storage tanks are set in areas dug out of the hills of Whiddy Island and are painted the color green of the local foliage so that not only do they not obtrude, but they are not too noticeable, as is the case with the entire facility.

During the course of the inspection of the Bantry Bay facility, the local fishing and tourist interests requested a meeting with me. They claimed they got my name from the American Embassy in Dublin. I met these people with the understanding that the General Manager of the Bantry Bay facility, Captain Monahan, and the Public Affairs Officer, Bill Finnegan, should be present. These local fishing and tourist interests indicated that they have no great objection to the Bantry Bay transshipment facility as it exists and that there had been a minimum of pollution and a low profile. However, these interests were greatly concerned that the American Petroleum Company had taken options to purchase the remainder of Whiddy Island and were making application to the Cork County Council to establish an oil refinery on the remainder of Whiddy Island. The proposed refinery would have a capacity of 7 million tons per year, primarily for export. It was apparent that the local interests were opposed to the refinery coming into the area and a local emergency newspaper eight pages in length was being circulated together with a petition against the placing of the refinery on Whiddy Island. The indications were that the application would be passed on by the Cork County Council by the end of the year and that the results would be negative.

These local interests also represented that oil had been found several days before on the north shore of Bantry Bay. Captain Monahan indicated that he and Dr. Crapp (an Irish Marine Biologist) had investigated that oil at the time and sent a sample to the laboratory for analysis in an attempt to show that it was not oil handled by their facility. He also indicated that there had not been a tanker into the Bantry Bay facility for five days preceding the appearance of this oil. Despite these facts, any oil appearing in Bantry Bay presents a *prima facie* case of culpability on the part of the Bantry Bay facility, since it exists and is operating there.

Although there is no local authority to deal with an oil spill and the only facilities existing to cope with such a spill belong to the Bantry Bay facility, it appeared that the officials at Bantry Bay worked as closely as possible with the local people concerning possible and actual oil pollution in the bay. This lends itself to the suggestion that any legislation we may enact providing for the establishment and operation of offshore facilities might contain a compact between the Federal and local State authorities of the State off which the offshore terminal is located. This compact might provide for full cooperation between the local and State authorities with respect to all environmental matters. Although the State would most probably lack both the equipment and personnel to attack an oil spill, nevertheless it would seem useful and appropriate to provide for State participation in these matters to the fullest extent possible and to provide for State input on all environmental matters affecting the offshore terminal.

There was a presentation made by an Irish Marine Biologist who was working on the impact of the terminal on local marine life. This Marine Biologist, Dr. Geoffery Crapp, was operating under an academic grant. His conclusions in essence were that successive spills would destroy marine flora and fauna but that up to this point the existence of the Gulf Bantry Bay transshipment terminal had not had an adverse impact on the marine life in the Bay, and that in general no impoverishment of littoral fauna and flora has been found since the establishment of the Bantry Bay facility.

With respect to the establishment of U.S. offshore terminals and the Bantry Bay facility, there is quite a difference when you are piping vast quantities of oil a mere 1300 feet between the delivery system and the storage tanks and when you are piping this energy fuel a distance of 15 to 25 miles under the sea on the seabed. The latter arrangement obviously is more susceptible to control and surveillance, while the long distance for piping may allow a greater margin of incident and disaster.

It seemed that the offshore terminal in Bantry Bay was so far a great success and was being operated with minimal effect on the local inhabitants, the local industries, the local governments and the local environment.

The Bantry Bay fixed pier type of terminal is not the kind of terminal we are considering off our shores. From talks with the Gulf and British Petroleum people, it seems logical and certain that we will go to the mono-buoy, single point mooring type of terminal. There are already about 100 of these located in the North Sea, the Persian Gulf and the Orient. Most are located in the Orient and the Persian Gulf. The mono-buoy type terminal is much better for the open sea because of its flexibility and movement capability than is a fixed pier type facility.

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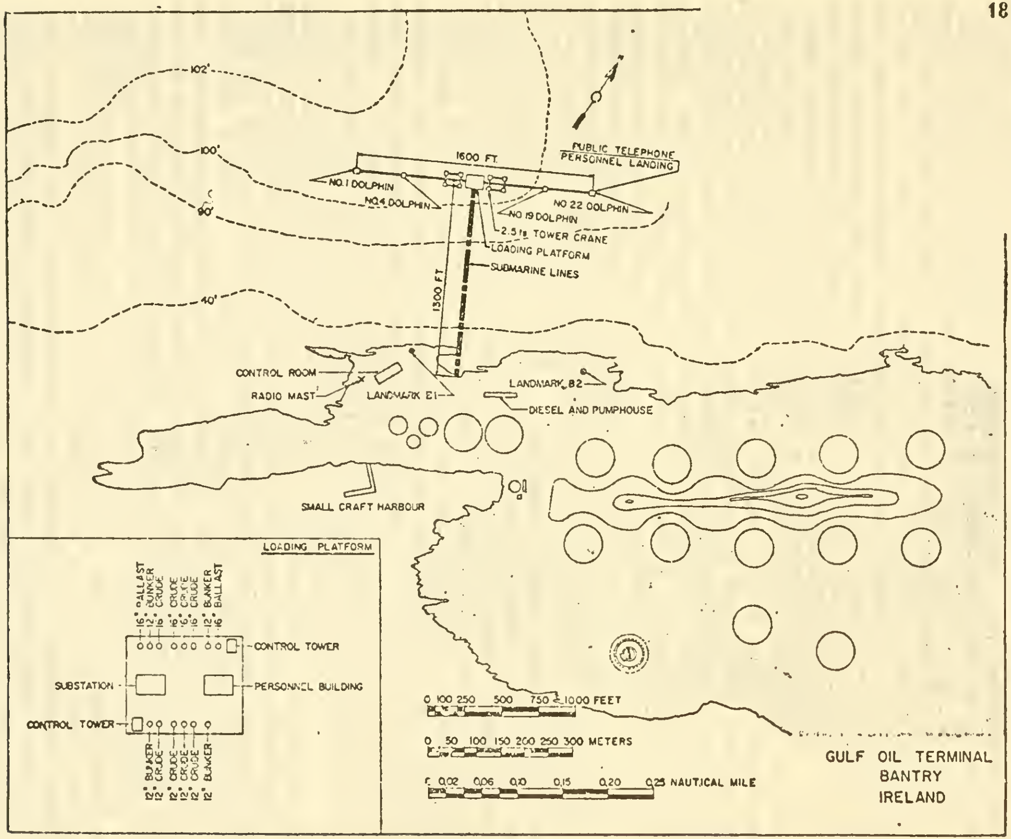


EAGLE - CORK

MILFORD HAVEN

Milford Haven is one of the best natural harbors in England, long the favorite port of the British Navy and Admiral Nelson. In addition, the port is the most fog-free port in England and the tide ranges are not great. For these reasons, five major international oil companies have established petroleum loading and offloading facilities in Milford Haven. Four of the five terminal facilities are connected to refinery complexes. These facilities began to be developed in 1960 and were improved considerably in the late 60's to provide for supertankers. Milford Haven has become the second largest oil port in Europe, handling 45.7 million tons of oil in 1972, with 24.05 million net registered tons of shipping calling in the same year.

The BP Angle Bay Ocean Terminal is linked to BP's Llandarcy Refinery by a 62-mile buried 18-inch pipeline, with a capacity of 9.2 million tons a year. Before the Angle Bay Terminal was built, the refinery had an annual capacity of 3 million tons, which has successively increased to today's 8.2 million tons. The terminal's shore arm extends 1350 feet, with a 16-foot roadway and a 32-foot wide pipe rack. The jetty head, some 3900 feet in length overall, lies at right angles to the approach arm and has three berthing heads, two capable of accommodating tankers of up to 120,000 DWT and a third capable of berthing tankers of 300,000 DWT. This BP terminal facility is representative of the terminal facilities of ESSO, Texaco, Gulf and AMOCO, which are also located in Milford Haven. The loading and offloading facilities at Milford Haven differ from the terminal facility at Bantry Bay in that the Bantry Bay terminal is not a land extension but is out in the water and connected to the storage tanks on Whiddy Island by pipelines buried in the bed of Bantry Bay. The Milford Haven terminals differ even more radically from the type facility which will undoubtedly be established off the coasts of the United States, which will in all probability be monobuoys of the single fixed mooring type. As with Bantry Bay, at Milford Haven the oil is only piped a short distance to the storage tanks, whereas in our facilities the oil will have to be piped distances of 20 to 25 miles via pipelines buried in concrete in the ocean bed.

The five oil companies purchased the land on which the storage and refineries are located from local farmers. The bed of Milford Haven is owned by the British Government. As a consequence, it was necessary for the five oil companies each to get a separate Act of Parliament in order to construct their terminals at Milford Haven. In addition, the Head of the Milford Haven Conservancy Board indicated that they also had to get approximately thirty licenses, leases and approvals from local authorities. This having been done, they were able to construct their terminals and assert jurisdiction over the waters within several hundred yards of their terminals. As with Bantry Bay, there is no Federal or local authority over the loading and offloading and pipe operations of the oil terminal operations. This is strictly done under the surveillance of oil company personnel and monitoring equipment. With respect to terminal facilities established off our coasts, it is anticipated that the loading and unloading operation and piping will be done under strict Federal regulation and Federal surveillance.

With the development of the Milford Haven complex, and the enormous increase in shipping therein, there was a need to create a Civil Port Authority for overall control. Thus, the government in a unique act of legislation set up the Milford Haven Conservancy Board under the Milford Haven Conservancy Act of 1958. The Milford Haven Conservancy Board consists of a Chairman and 17 members, all of whom act in an honorary capacity.

The Board is charged with the duty to maintain, improve and protect and regulate navigation in Milford Haven. These duties include traffic control for vessels using the Haven, provision of lights, buoys and communications for the safety of shipping; the improvement of navigation by dredging; and the control of physical work to insure that there is no deterrent to navigation in the Haven. The Board also has the right to levy dues on vessels entering the Haven, to provide the necessary revenue.

Shipping movements increased from 2,270 in 1961 in the Haven to 8,500 movements in 1972. In this same year, with major oil company developments in progress, it became obvious that it was necessary to have more accurate information available on the position of shipping, and experience showed that, in the case of very large tankers, a very precise knowledge of the vessel's speed was necessary to ensure safe berthing and safe passage past occupied berths. It was decided, therefore, to provide complete surveillance of the harbor and the approaches by means of radar and accurate speed and distance measuring equipment. This equipment, which will be operational by the autumn of 1973, will consist of three individual radars, one situated on St. Ann's Head to cover the seaward approaches, one at Great Castle Head to cover the western Haven, and one on the Signal Station to cover the eastern Haven, all linked by microwave links to a console in the Signal Station. The new radar equipment and new improved communications equipment will be housed in an entirely new signal station which is being built above the Board's existing Station at Hubberston Point. In addition, transponder beacons are being established on the West Blockhouse and Great Castle Head transit light beacons and on the BP jetty which, together with portable pulse radar equipment which will be carried aboard individual ships, will provide the Master or pilot with a means by which he can read off instantaneously in digital form his speed, his distance from the next turning point in the channel, and his displacement left or right of the center line of the channel.

ESSO, Texaco, Gulf and AMOCO all have terminal facilities in the Haven, having roughly the same physical characteristics and capabilities as the BP terminals. These other four terminals connect directly with storage facilities and separate refineries. Aside from the lack of oil being present in the water of the Haven, a visitor is impressed by the efforts taken by these organizations to keep a low profile and to conceal the storage tanks as much as possible and to keep the refineries well back from the Haven so as to be unobtrusive. On the basis of the situation at Bantry Bay and the complex at Milford Haven, one concludes that if two or three offshore terminal facilities are established off the coast of the United States, it will inevitably result in the establishment of increased refinery capacity somewhere on land not too far distant from the incoming pipelines from the offshore terminal facilities.

As with the facility at Bantry Bay, there are always several tugs on standby alert as well as two or three firefighting tugs with hose towers. As Britain's major oil port, handling some 46 million tons of crude oil and oil products annually (an average of well over 125,000 tons per day), it is perhaps inevitable that human errors result in some oil polluting the waters of the Haven; although all such errors, with resulting pollution, are not by any means confined to oil tankers, nor to the oil industry alone. Situated in an area of great natural beauty and with exceptionally pure waters, Milford Haven has required very special measures to safeguard it from oil pollution and already has a worldwide reputation in this sphere.

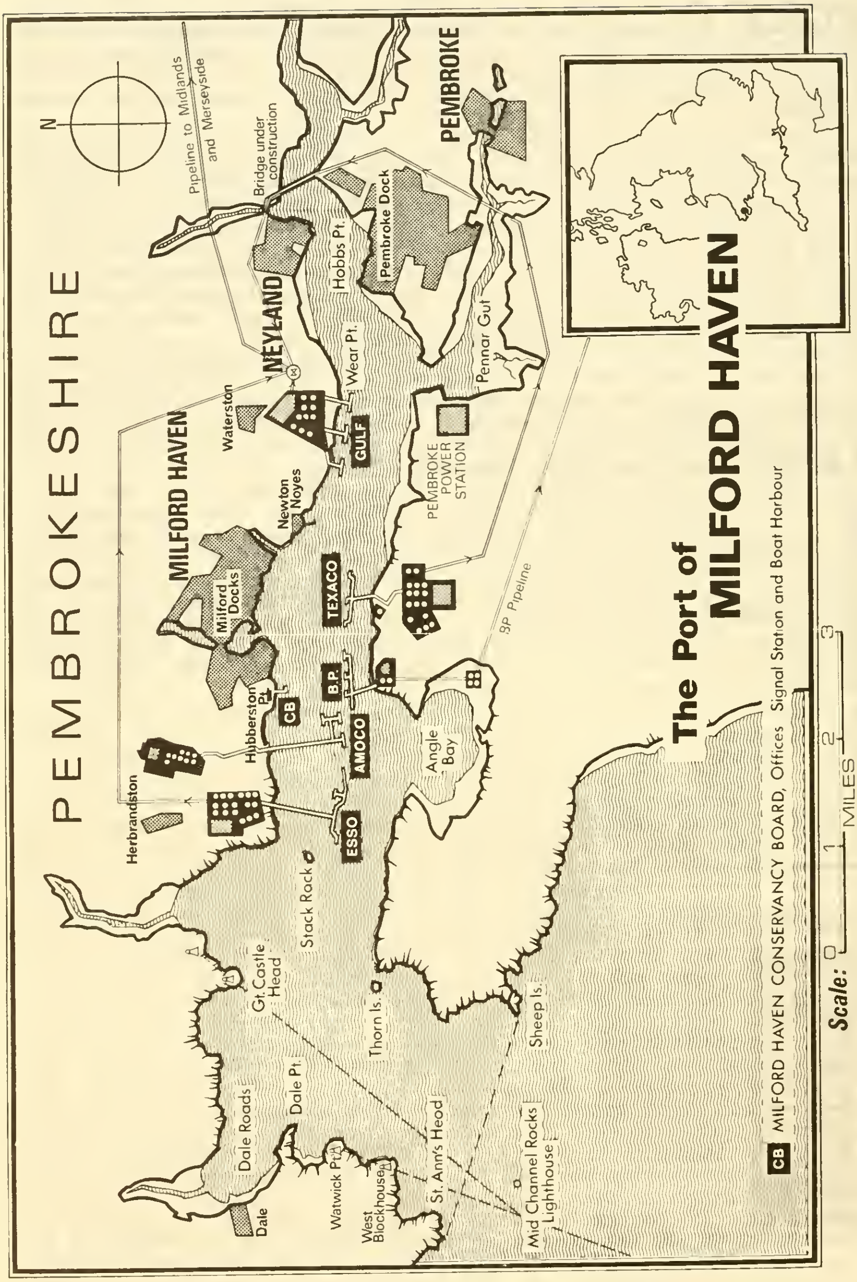
Individual oil companies each maintain the most stringent regulations, strictly enforced, for ensuring that oil spillages do not occur at their terminals. In addition, the Milford Haven Conservancy Board, together with the oil companies, has produced a plan which sets out the agreed action to be taken by all when oil pollution occurs and lists the resources available for dealing with it. The aim of the plan is to treat all oil while it is still floating, before any of it reaches the shore, and very careful attention has been paid to the special requirements of the various nature and amenity interests. The plan provides for frequent patrolling of the Haven by the Conservancy Board, rapid reporting to the Conservancy Board Signal Station of any floating oil sighted by any person anywhere, and the maintenance at approximately half-hour calls throughout the 24 hours of a special oil dispersal vessel. This unique vessel, the "Seaspray", has been equipped and constructed for the most efficient treatment of floating oil with emulsifying chemicals, by spraying the detergent and by agitating the sprayed oil with a water jet to ensure that the necessary emulsion results, and the oil is dispersed. The oil dispersal service is operated on the basis that the first task is to eliminate the pollution, and arguments as to responsibility are left until later. Where necessary, the Harbormaster arbitrates on the responsibility for individual spillages and where there is doubt the costs of cleaning up are shared by all involved parties.

The Anti-Oil Polllution Plan provides also for detailed measures to be taken when damaged tankers arrive in the Haven, and for major spillages, provision has been made for portable equipment for dealing with pollution of the shores of the Haven. Ample stocks of oil emulsifier are held by the oil companies for common use in emergency. Special arrangements have been made for the closest consultation with local authorities, nature interests, etc., and early warning is provided to them if the spill is at all serious and likely to reach the shores. The plan provides for special beach patrols where necessary.

As at Bantry Bay, the Milford Haven Conservancy Board employs a Marine Biologist who makes constant studies of Milford Haven and the surrounding area in order to assess the impact of these commercial operations on marine life. This Marine Biologist, Dr. Jennifer Baker, made about a 45 minute presentation to the visiting group. In essence, her conclusions were similar to Dr. Crapp's at Bantry Bay, to the effect that to date these commercial operations had not caused any great dislocation or decimation of the indigenous marine biota. However, it was also her conclusion that excessive oil spills or continued presence of large amounts of oil would destroy not only the marine biota but the surrounding grasslands.

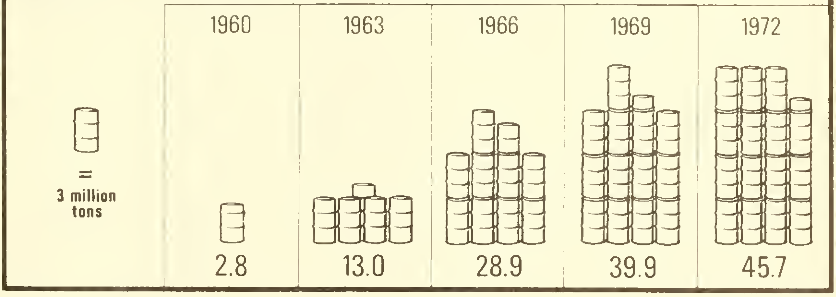
Discussions with those who established the Bantry Bay and Milford Haven loading and offloading facilities indicate that some sort of Federal legislation is essential to the entrepreneurs establishing terminal facilities off the coasts of the United States. Also, it appeared preferable that the terminal should be constructed and operated by private interests and should not be owned or operated by a State or the Federal Government.

At Bantry Bay and Milford Haven, the oil companies have made every effort to minimize their presence in these areas and the effect of these facilities on the surrounding area. Unfortunately, up to this point in time, U.S. industry has paid little or no attention to the physical relationship of industrial facilities to surrounding areas and communities. This must change and great care must be taken by the entrepreneurs to minimize the impact of these offshore terminals physically, economically, politically and environmentally on the contiguous States. Bantry Bay and Milford Haven really demonstrate how much can be accomplished in this area when there is the will to do so.

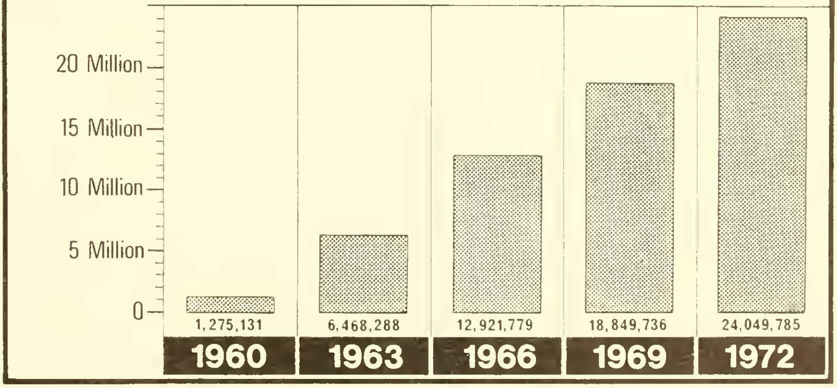

PEMBROKESHIRE
N
Pipeline to Midlands and Merseyside
Bridge under construction
PEMBROKE
Pembroke Dock
Hobbs Pt.
NEYLAND
Wear Pt.
Waterston
GULF
MILFORD HAVEN
Newton Noyes
PEMBROKE POWER STATION
Pennar Gut
Milford Docks
TEXACO
BP Pipeline
Hubberston Pt.
CB
B.P.
AMOCO
Herbrandston
ESSO
Angle Bay
Stack Rock
Gt. Castle Head
Thorn Is.
Sheep Is.
Dale Roads
Dale Pt.
Dale
Watwick Pt.
West Blockhouse
St. Ann's Head
Mid Channel Rocks Lighthouse
The Port of
MILFORD HAVEN
Scale: 0 1 2 3
MILES
CB MILFORD HAVEN CONSERVANCY BOARD, Offices Signal Station and Boat Harbour

PORT OF MILFORD HAVEN

ANNUAL CARGO HANDLED (in millions of tons)



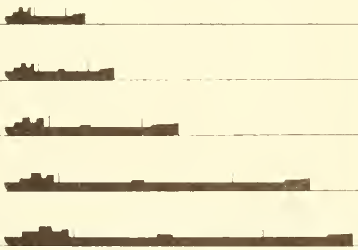
ANNUAL TONNAGE OF VESSELS HANDLED (Net Register Tons)



INCREASE IN SIZE OF SHIP HANDLED

Largest ship in each year, Deadweight tons

1960	OLYMPIC CHALLENGER	65,000
1963	ESSO LIBYA	90,000
1966	BERGEHAVEN	142,000
1969	ESSO SCOTIA	250,000
1972	ROSA MAERSK	285,000



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